TS700-E4/RX8 Server

Pedestal/5U Rackmount Server
User's Manual

E3008

First edition V1
January 2007

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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer' s instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING! The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

- Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.
- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing any additional devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your dealer.

Operation safety

- Any mechanical operation on this server must be conducted by certified or experienced engineers.
- Before operating the server, carefully read all the manuals included with the server package.
- Before using the server, make sure all cables are correctly connected and the power cables are not damaged. If any damage is detected, contact your dealer as soon as possible.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Place the server on a stable surface.

This product is equipped with a three-wire power cable and plug for the user's safety. Use the power cable with a properly grounded electrical outlet to avoid electrical shock.

Lithium-Ion Battery Warning

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CD-ROM Drive Safety Warning

CLASS 1 LASER PRODUCT

Heavy System

CAUTION! This server system is heavy. Ask for assistance when moving or carrying the system.

About this guide

Audience

This user guide is intended for system integrators and experienced users with at least basic knowledge of configuring a server.

Contents

This guide contains the following parts:

1. **Chapter 1: Product Introduction**

   This chapter describes the general features of the barebone server, including sections on the front panel and rear panel specifications.

2. **Chapter 2: Hardware setup**

   This chapter lists the hardware setup procedures that you have to perform when installing or removing system components.

3. **Chapter 3: Motherboard information**

   This chapter gives information about the motherboard that comes with the server. This chapter includes the motherboard layout, jumper settings, and connector locations.

4. **Chapter 4: BIOS setup**

   This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

5. **Chapter 5: RAID configuration**

   This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

6. **Chapter 6: Driver installation**

   This chapter provides instructions for installing the necessary drivers for different system components.

Conventions

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and information to aid in completing a task.

Reference

1. ASUS Server Web-based Management (ASWM) user guide

   This manual tells how to set up and use the proprietary ASUS server management utility.

2. ASUS websites

   The ASUS websites worldwide provide updated information for all ASUS hardware and software products. Refer to the ASUS contact information.

Chapter 1

This chapter describes the general features of the barebone server, including sections on the front panel and rear panel specifications.

Product introduction

1.1 System package contents

Check your system package for the following items.

Chassis	ASUS T70 5U rackmount chassis
Motherboard	ASUS DSBF-D12/SAS motherboard
Components	1 x 730W redundant power supply module
	1 x power supply bay cover
	1 x optical drive
	1 x Floppy disk drive
	Chassis fan 1 x 12 cm rear fan 2 x 8025 system fan 2x 8038 CPU fan
	2 x MemCool FB-DIMM fan kit
	8 x Hot-swap HDD trays (including HDD screws)
	2 x SAS/SATA backplane board (BP4LX-T30)
	1 x Front panel board (FPB-AS25/2U)
	2 x 5¼" Dummy Covers
Cables	AC power cable
	System cables
	1 x USB cable
	2 x SAS cables
	SMBus cable
Accessories	2 x System keys
	TS700-E4/RX8 user guide
	TS700-E4/RX8 support CD (includes ASWM*)
	ASWM 2.0 user guide
	CA eTrust Anti-virus CD
	4 x Chassis roller wheel sets
	One bag of screws
Optional items	Rackmount rail kit
	ASUS certified heatsink

*ASUS System Web-based Management

If any of the above items is damaged or missing, contact your retailer.

1.2 System specifications

The ASUS TS700-E4/RX8/RX8 is a 5U barebone server system featuring the ASUS DSBF-D12/SAS motherboard. The server supports dual Intel LGA771 Xeon processors with EM64T technology, plus other latest technologies through the chipsets onboard.

Chassis	Rackmount 5U
Motherboard	ASUS DSBF-D12/SAS
Chipset	MCH : Intel® 5000P ICH : Intel® 6321ESB
CPU	Dual LGA771 sockets for Intel® Xeon™ Dual Core / Quad Core processors 5000/5100/5300 Series Supports Intel® Extended Memory 64Technology (EM64T) Supports Intel® Hyper-Threading Technology (5000 series supports H.T.; 5100/5300 series DOES NOT support H.T.)
Front Side Bus	1333/1066/667 MHz
Memory	Quadri-channel memory architecture 12 x 240-pin FB-DIMM sockets support registered ECC fully buffered DDR2-533/DDR2-667 memory modules with Advanced Memory Buffer (AMB chip) Supports 512 MB up to 48 GB system memory
LAN	Intel® 82563 Gigabit Network Connection (Dual-port) - Supports Intel® I/O Acceleration Technology (IOAT)
Discrete graphics	ATI® ES1000 PCI display controller - Supports 32 MB display memory
Expansion slots	1 x PCI Express™ x16 slot (x8 link) 2 x PCI Express™ x8 slots (x8 link) 1 x PCI-X 100/66 MHz slot 1 x PCI-X 100/66 MHz slot for optional Zero Channel RAID (ZCR) card (colored green) 1 x DDR2 SO-DIMM socket for ASUS® server management card 3 series
Storage	LSI1068 PCI-X SAS controller supports: - 2 x Serial Attached SCSI (SAS) channels (each channel supports 4 HDDs) with RAID 0, RAID 1, and RAID 1E configuration - Zero-Channel RAID (optional)

(continued on the next page)

Front panel	8 x 3.5-inch hot-swappable HDD bays 1 x optical drive 1 x 1.44MB floppy drive 2 x USB 2.0 ports Power switch Reset switch Power, HDD access, message LED HDD LEDs: Status, activity
Rear panel	1 x PS/2 keyboard port (purple) 1 x PS/2 mouse port (green) 2 x USB 2.0 ports 1 x Serial port 1 x VGA port 2 x LAN (RJ-45) ports
Management	ASUS Server Web-based Management (ASWM)
Hardware monitors	Voltage, temperature, and fan speed monitoring Automatic System Restart (ASR) feature
Power supply	1 + 1 730W redundant power supply, 115V~230V, 50Hz~60Hz
Dimensions	431mm (H) x 216mm (W) x 701mm (L)

*Specifications are subject to change without notice.

1.3 Serial number label

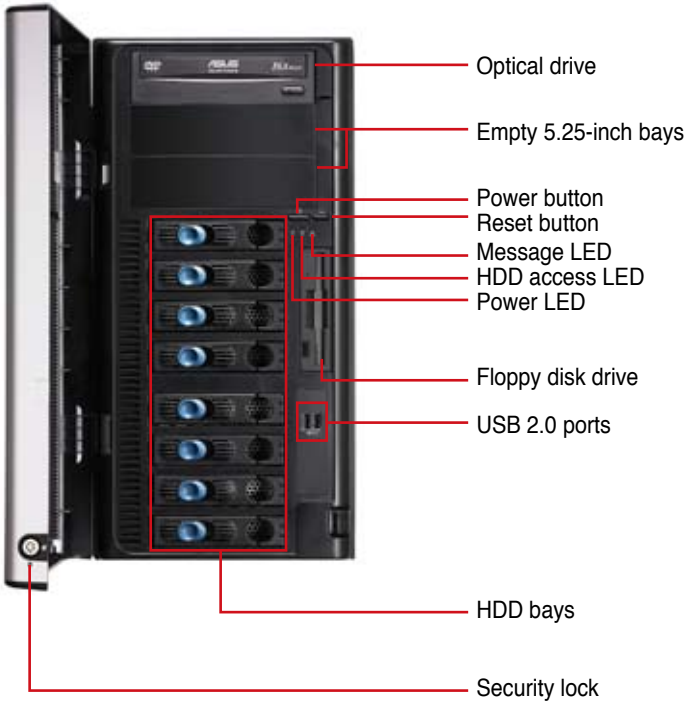
Before requesting support from the ASUS Technical Support team, you must take note of the product's serial number containing 10 characters such as xxxxxxx-xxx. See the figure below.

With the correct serial number of the product, ASUS Technical Support team members can then offer a quicker and satisfying solution to your problems.

1.4 Front panel features

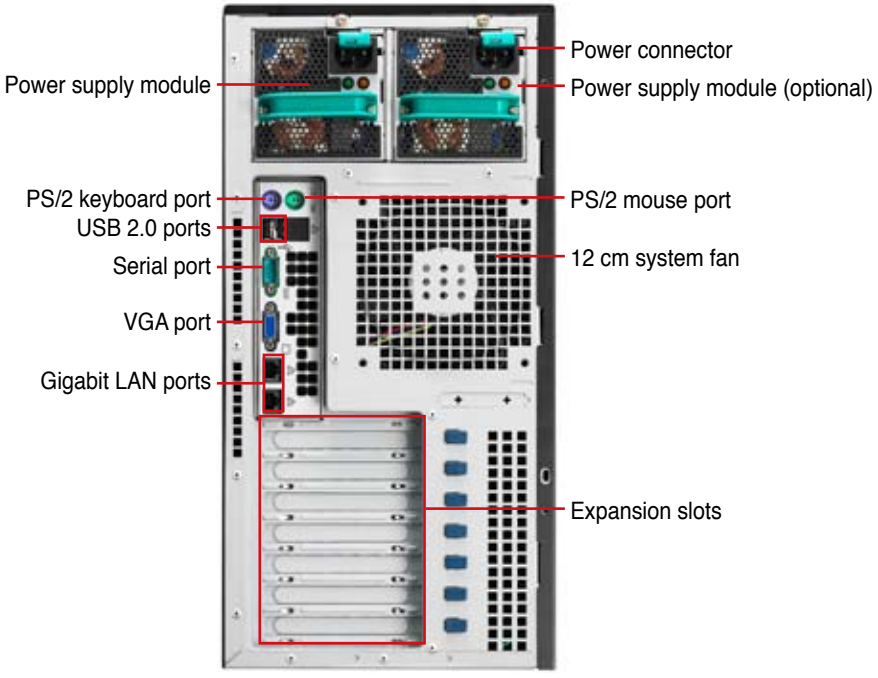
The barebone server displays a simple yet stylish front panel with easily accessible features. The power and reset buttons, LED indicators, optical drive, and two USB ports are located on the front panel.

The drive bays, power and reset buttons, LED indicators, CD/DVD-ROM drive, floppy drive, and USB 2.0 ports are located on the front panel. For future installation of 5.25-inch devices, two drive bays are available.



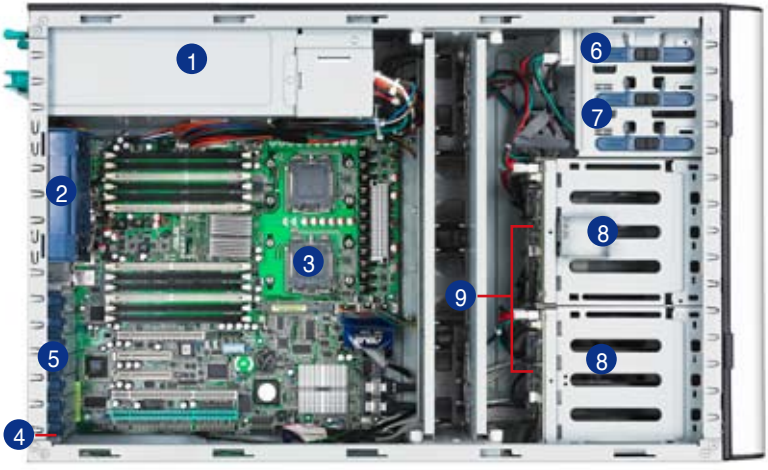
1.5 Rear panel features

The rear panel includes a slot for the motherboard rear I/O ports, expansion slots, a chassis lock and intrusion switch, a vent for the system fan, and power supply module.



1.6 Internal features

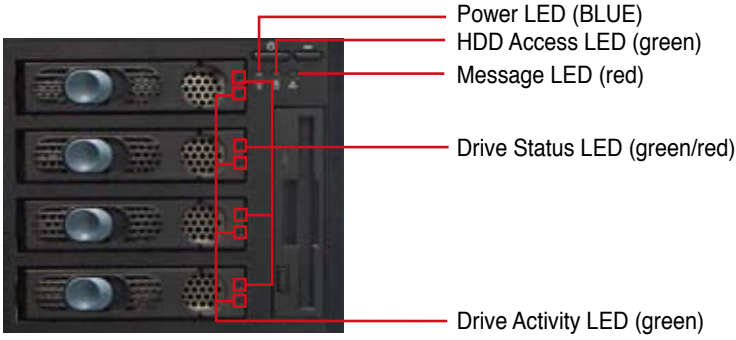
The barebone server includes the basic components as shown.



1. Power supply unit
2. Chassis fan
3. ASUS DSBF-D12/SAS Motherboard
4. Chassis intrusion switch
5. Expansion card locks
6. Optical drive
7. 2 x 5.25-inch drive bays
8. Hot-swap HDD cages
9. SAS backplane

1.7 LED information

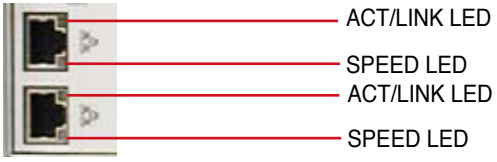
1.7.1 Front panel LEDs



LED	Icon	Display status	Description
Power LED		ON	System power ON
HDD Access LED		OFF Blinking	No activity Read/write data into the HDD
Message LED		OFF Blinking	System is normal; no incoming event ASWM indicates a HW monitor event
Drive status LED		Green Red Green/Red blinking	Bridge board connected to backplane Installed HDD is in good condition HDD failure HDD rebuilding using the RAID card
Drive activity LED		Blinking	Read/write data into the HDD

The Power, HDD Access, and Message LEDs are visible even if the system front bezel is closed.

1.7.2 Rear panel LEDs



ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
GREEN	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

Chapter 2

Hardware setup

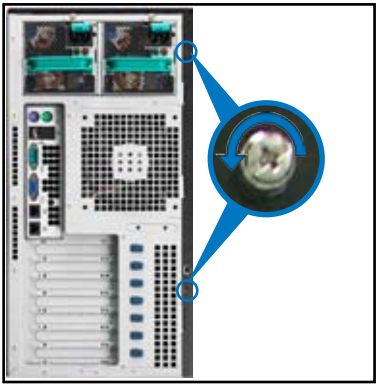
This chapter lists the hardware setup procedures that you have to perform when installing or removing system components.

2.1 Chassis cover

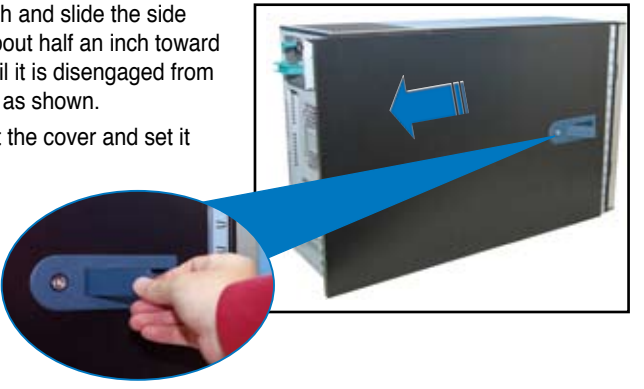
The chassis features a “screwless design” that allows convenient assembly and disassembly. You can simply push or slide mechanical bolts and locks to remove the cover.

2.1.1 Removing the side cover

1. Remove the two screws that secure the cover to the chassis.



2. Pull the latch and slide the side cover for about half an inch toward the rear until it is disengaged from the chassis as shown.
3. Carefully lift the cover and set it aside.



Viewing the internal structure

Without the side cover, the internal structure and installed components of the barebone server vary depending on the model you purchased. Refer to section “1.5 Internal features” for the different model configurations.

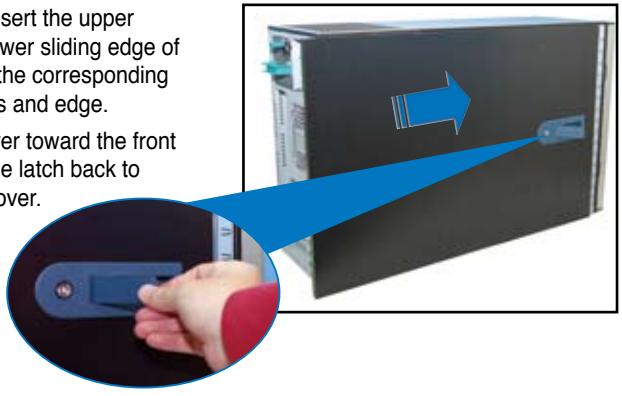
Perform the procedures in the succeeding sections to install the CPU, system memory, disk drives, and expansion cards; replace fans and power supply; and connect the system cables.

You may need to remove some of the installed components to access the DIMM sockets and internal connectors. Refer to section “2.10 Removable components” for instructions.

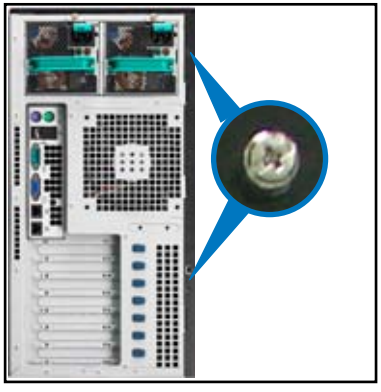
2.1.2 Reinstalling the side cover

To reinstall the side cover:

1. Match and insert the upper hooks and lower sliding edge of the cover to the corresponding chassis holes and edge.
2. Slide the cover toward the front and snaps the latch back to secure the cover.



3. Drive in the two screws you removed earlier to secure the side cover.

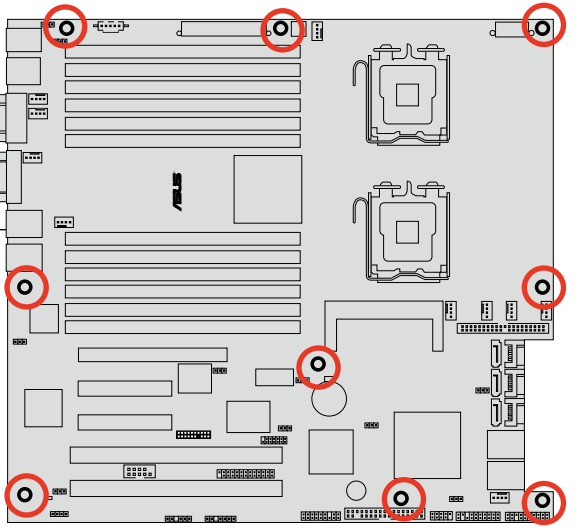


2.2 Motherboard information

The barbone server comes with the DSBF-D12/SAS motherboard already installed. The motherboard is secured to the chassis by nine (9) screws as indicated by the circles in the illustration below.

Refer to **Chapter 3 Motherboard info** for detailed information on the motherboard.

Place this side towards the rear of the chassis



Make sure to unplug the chassis power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components!

2.3 Central Processing Unit (CPU)

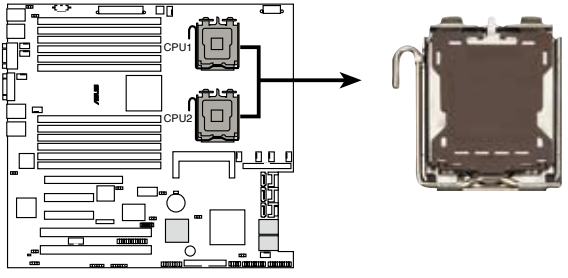
The motherboard comes with a surface mount LGA771 socket designed for the Intel® Xeon® Dual Core processor.

- Your boxed Intel® Xeon® LGA771 processor package should come with installation instructions for the CPU and heatsink. If the instructions in this section do not match the CPU documentation, follow the latter.
- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA771 socket.
- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/ incorrect removal of the PnP cap.

2.3.1 Installing the CPU

To install a CPU:

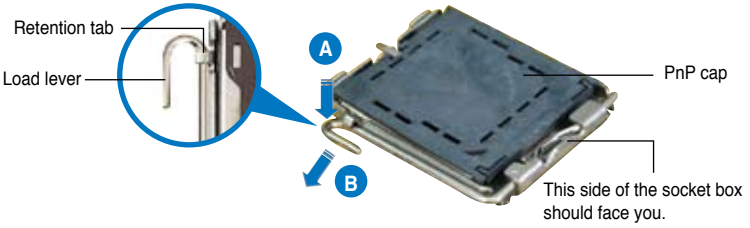
1. Locate the CPU socket on the motherboard.



DSBF-D12 Series CPU LGA771

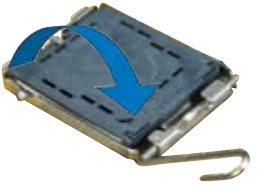
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

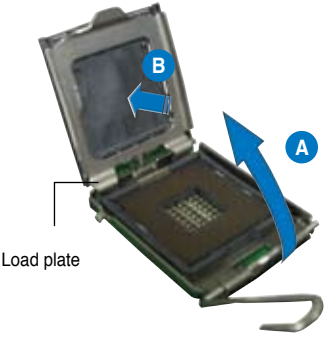


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

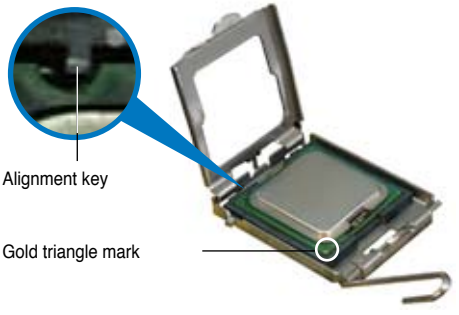
3. Lift the load lever in the direction of the arrow to a 135º angle.



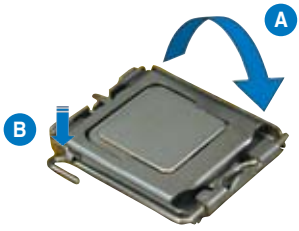
4. Lift the load plate with your thumb and forefinger to a 100º angle (A), then push the PnP cap from the load plate window to remove (B).



5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket. The socket alignment key should fit into the CPU notch.



6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

Notes on Intel® Hyper-Threading Technology

- This motherboard supports Intel® Xeon™ CPUs in the 771-land package with Hyper-Threading Technology.
- Hyper-Threading Technology is supported by Intel® 5000 series CPU only. Intel® 5100/5300 series DOES NOT support Hyper-Threading.
- Hyper-Threading Technology is supported under Windows® XP/2003 Server and Linux 2.4.x (kernel) and later versions only. Under Linux, use the Hyper-Threading compiler to compile the code. If you are using any other operating systems, disable the Hyper-Threading Technology item in the BIOS to ensure system stability and performance.
- Installing Windows® 2003 Server or later version is recommended.
- Make sure to enable the Hyper-Threading Technology item in BIOS before installing a supported operating system.
- For more information on Hyper-Threading Technology, visit www.intel.com/info/hyperthreading.

To use the Hyper-Threading Technology on this motherboard:

1. Install an Intel® Xeon™ CPU that supports Hyper-Threading Technology.
2. Power up the system and enter the **BIOS Setup** (see Chapter 4: BIOS setup). Under the **Advanced Menu**, make sure that the item **Hyper-Threading Technology** is set to [Enabled]. The item appears only if you installed a CPU that supports Hyper-Threading Technology.
3. Reboot the computer.

2.3.2 Installing the CPU heatsink

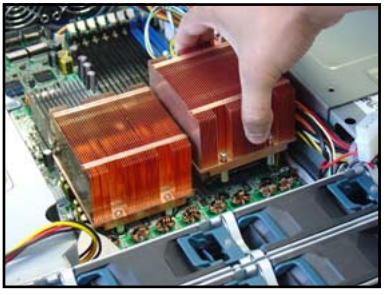
According to your purchase, the sever system may ship with different CPU and heatsink combination:

Two CPUs	One CPU	No CPU
Two heatsinks	One heatsink One dummy heatsink (on the CPU 2 socket)	One dummy heatsink (on the CPU 2 socket)

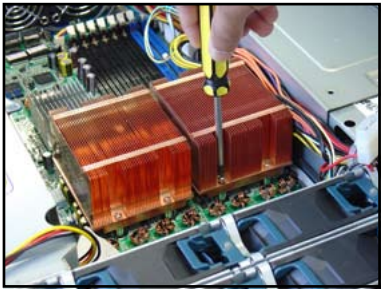
You must install the CPU heatsink(s) after installing the CPU(s). If your model is not included heatsinks, you can either purchase heatsink separately from ASUS retailer or purchase an Intel 2U box CPU.

To install the CPU heatsink:

1. Carefully align the heatsink screws to the screw holes on the motherboard.



2. Use a Phillips (cross) screwdriver to fasten screws, two at a time in a diagonal sequence.



3. For the second CPU heatsink installation, repeat the previous steps.

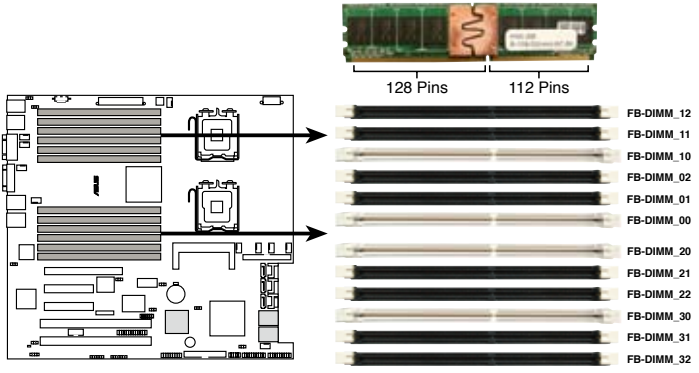
- If there is a dummy heatsink, unscrew and remove it first before installing the second real heatsink.
- DO NOT remove the dummy heatsink if there is only one CPU installed. The CPU 1 may be overheated and damaged with the removal of the dummy heatsink.

2.4 System memory

2.4.1 Overview

The motherboard comes with 12 fully-buffered DIMM (FB-DIMM) sockets to support 240-pin FB-DIMM modules. An FB-DIMM module has a different pin-out from DDR2 DIMMs so you cannot install DDR2 DIMMs on an FB-DIMM socket. Note that an FB-DIMM socket has an Advanced Memory Buffer (AMB) chip that allows memory-to-CPU connection at gigabit speed.

The figure illustrates the location of the FB-DIMM sockets:



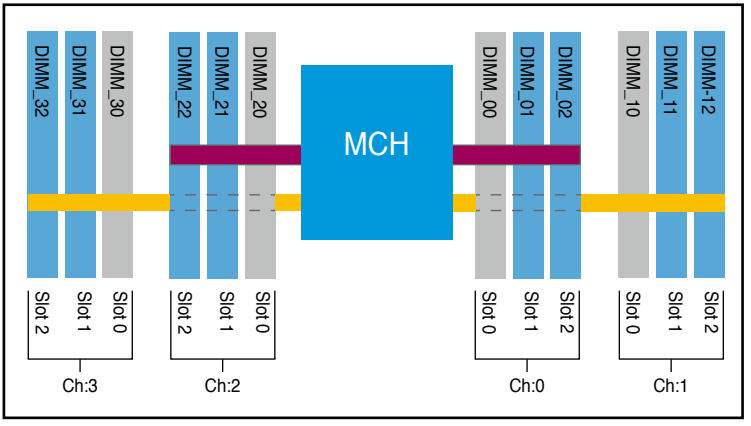
DSBF-D12 Series 240-pin FB-DIMM sockets

2.4.2 Memory configurations

You may install 512 MB, 1 GB, 2 GB, and 4 GB registered ECC FB-DIMMs into the DIMM sockets.

- For optimum compatibility, we recommend that you obtain memory modules from the same vendor. Refer to the Qualified Vendors List on the ASUS web site.
- This motherboard does not support memory modules made up of 128 Mb chips or double-rank x16 memory modules.
- If you are installing only one memory module, install into the white socket labeled DIMM_00. Installing into any other socket will not work.

Rank population



DIMM installation reference table

No. of DIMMs	Slot/s to use
1	DIMM_00
2	DIMM_00, DIMM_10
4	DIMM_00, DIMM_10, DIMM_20, DIMM_30
8	DIMM_00, DIMM_10, DIMM_20, DIMM_30 DIMM_01, DIMM_11, DIMM_21, DIMM_31
12	DIMM_00, DIMM_01, DIMM_02 DIMM_10, DIMM_11, DIMM_12 DIMM_20, DIMM_21, DIMM_22 DIMM_30, DIMM_31, DIMM_32

DIMMs in pair means two DIMMs with the same configuration.

2.4.3 Memory mirroring and sparing technology

The Intel® 5000P chipset supports the memory mirroring and sparing technology. Refer to the below sections:

Memory Mirroring

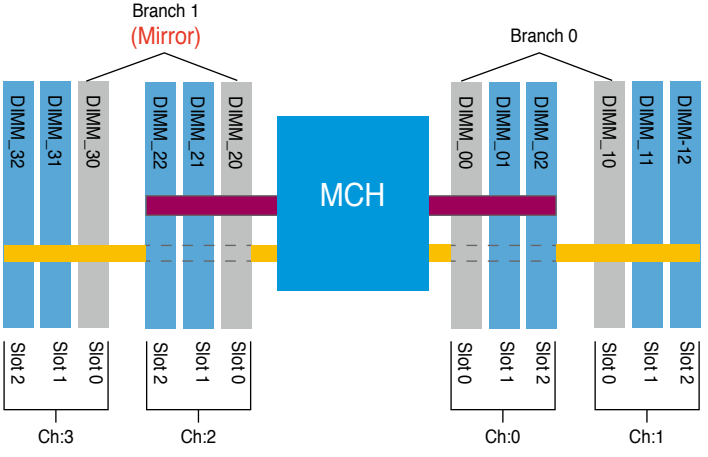
When enabling memory mirroring function in the BIOS setting (refer to section **4.4.2 Chipset Configuration** and configure the option **Memory Branch Mode as Mirror)**, Branch 1 contains a replicate copy of the data in Branch 0. The DIMMs must cover the same slot position on both branches. DIMMs that cover a slot position must be identical with respect to size, speed, and organization. DIMMs within a slot position must match each other, but are not required to match adjacent slot positions.

The total memories size will be the half of all installed memories.

The below memory configurations were required to operate in mirrored mode.

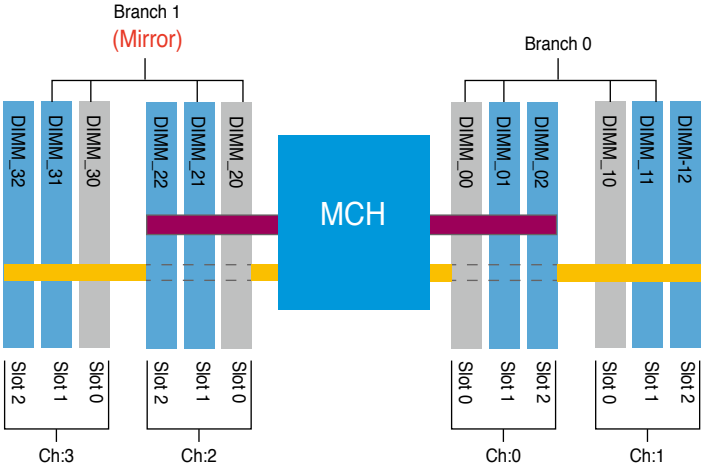
Configuration 1 (Mirroring): Four memories population

DIMMs are installed in the following slots: DIMM_00, DIMM_10, DIMM_20, and DIMM_30.



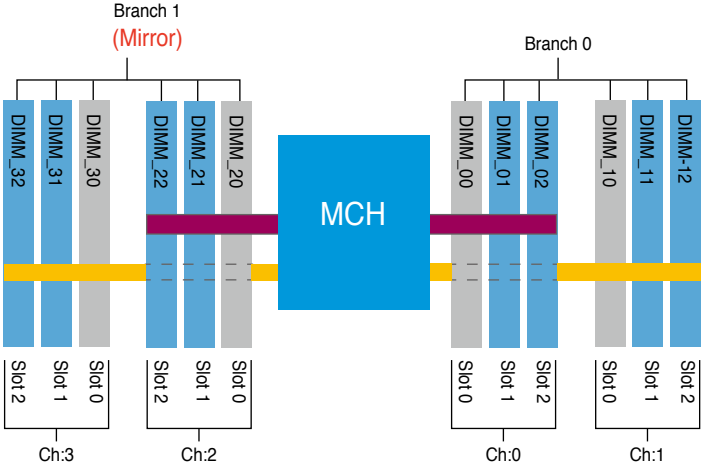
Configuration 2 (Mirroring) : Eight memories population

DIMMs are installed in the following slots: DIMM_00, DIMM_01, DIMM_10, DIMM_11, DIMM_20, DIMM_21, DIMM_30, and DIMM_31.



Configuration 3 (Mirroring) : Twelve memories population

DIMMs are installed in all slots: DIMM_00, DIMM_01, DIMM_02, DIMM_10, DIMM_11, DIMM_12, DIMM_20, DIMM_21, DIMM_22, DIMM_30, DIMM_31, and DIMM_32.



Memory Sparing

At configuration time, a DIMM rank is set aside to replace a defective DIMM rank. When the error rate for a failing DIMM rank reaches a pre-determined threshold, the memory sparing function will issue an interrupt and initiate a spare copy. At the completion of the copy, the failing DIMM rank is disabled and the “spared” DIMM rank will be used in its place. Refer to section “4.4.2 Chipset Configuration and configure the options of “Branch 0 Rank Sparing” or “Branch 1 Rank Sparing” to enable the memory sparing functions. The default BIOS setting is disabled.

- Each branch contains its own sparing engine and can be enabled or disabled separately.
- This motherboard does not support rank sparing across branches.
- This motherboard does not support rank sparing when in mirror mode.
- The DIMM rank with the largest size will be assigned as spare rank. Data can only be copied from a smaller sized rank to a larger sized one.
- A DIMM can contain only one or two ranks. To support sparing function, a DIMM channel should contain at least two ranks.
- When sparing function is enabled, the usable memory size will reduce the size of the spare ranks.

The following tables show memory configurations with Memory Sparing function in Branch 0.

One DIMM per channel (two ranks)

		Channel 0		Channel 1	
		DIMM_00 (1024MB*2 Ranks)		DIMM_10 (1024MB*2 Ranks)	
Branch0		Rank 0 (1024 MB)	Rank 1 (1024 MB)	Rank 0 (1024 MB)	Rank 1 (1024 MB)
	Sparing		•		•
	Memory space	1024 MB		1024 MB	
	Total Memory	2048 MB			

Two DIMMs per channel

		Channel 0		Channel 1	
		DIMM_00 (512MB*2 Ranks)		DIMM_10 (512MB*2 Ranks)	
		Rank 0 (512 MB)	Rank 1 (512 MB)	Rank 0 (512 MB)	Rank 1 (512 MB)
	Sparing				
	Memory space	1024 MB		1024 MB	
Branch0		DIMM_01 (1024MB*2 Ranks)		DIMM_11 (1024MB*2 Ranks)	
		Rank 0 (1024 MB)	Rank 1 (1024 MB)	Rank 0 (1024 MB)	Rank 1 (1024 MB)
	Sparing		•		•
	Memory space	1024 MB		1024 MB	
	Total Memory	4096 MB			

Three DIMMs per channel

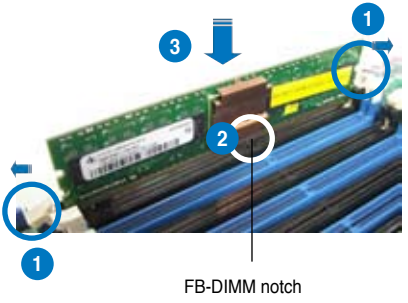
		Channel 0		Channel 1	
		DIMM_00 (512MB*2 Ranks)		DIMM_10 (512MB*2 Ranks)	
		Rank 0 (512 MB)	Rank 1 (512 MB)	Rank 0 (512 MB)	Rank 1 (512 MB)
	Sparing				
	Memory space	1024 MB		1024 MB	
		DIMM_01 (1024MB*2 Ranks)		DIMM_11 (1024MB*2 Ranks)	
		Rank 0 (1024 MB)	Rank 1 (1024 MB)	Rank 0 (1024 MB)	Rank 1 (1024 MB)
Branch0	Sparing				
	Memory space	1024 MB		1024 MB	
		DIMM_02 (2048MB*2 Ranks)		DIMM_12 (2048MB*2 Ranks)	
		Rank 0 (2048 MB)	Rank 1 (2048 MB)	Rank 0 (2048 MB)	Rank 1 (2048 MB)
	Sparing		•		•
	Memory space	2048 MB		2048 MB	
	Total Memory	10240 MB			

2.4.4 Installing a DIMM

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

To install a DIMM:

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

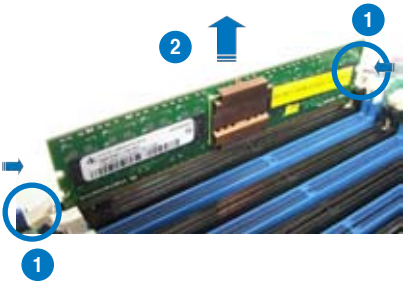


- A FB-DIMM is keyed with a notch so that it fits in only one direction. Do not force a DIMM into a socket to avoid damaging the DIMM.
- Thesockets do not support DDR/DDR2 DIMMs. DO NOT install DDR/DDR2 DIMMs to the FB-DIMM sockets.

2.4.5 Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

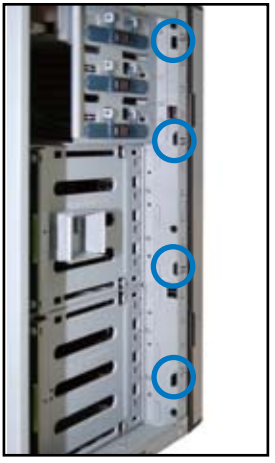
2.5 Front panel assembly

2.5.1 Removing the front panel assembly

Before you can install a 5.25-inch drive, you should first remove the front panel assembly (front bezel and front panel cover). The front panel assembly is attached to the chassis through three hooked tabs on the left side and four hinge-like tabs on the right side.

To remove the front panel assembly:

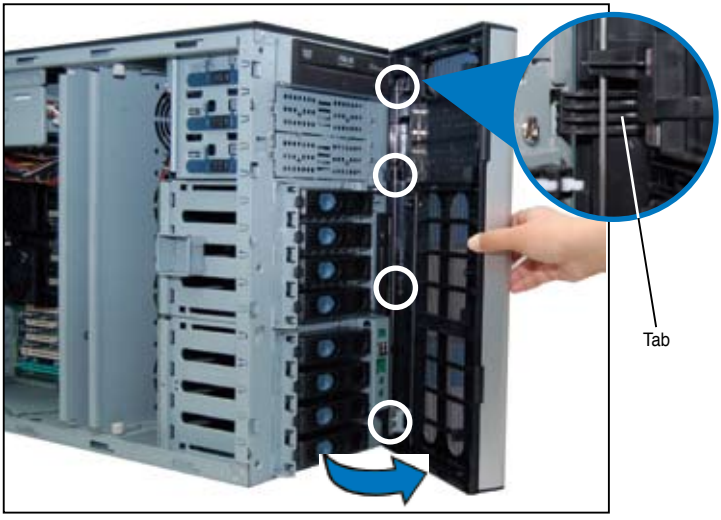
1. Locate the four hooked tabs on the chassis side rail.
2. Press each lock tab to release the front panel from the chassis.



3. Pull and swing the left edge of the front panel outward.

4. Unhook the hinge-like tabs from the holes on the right side of the front panel to completely detach the front panel assembly from the chassis.

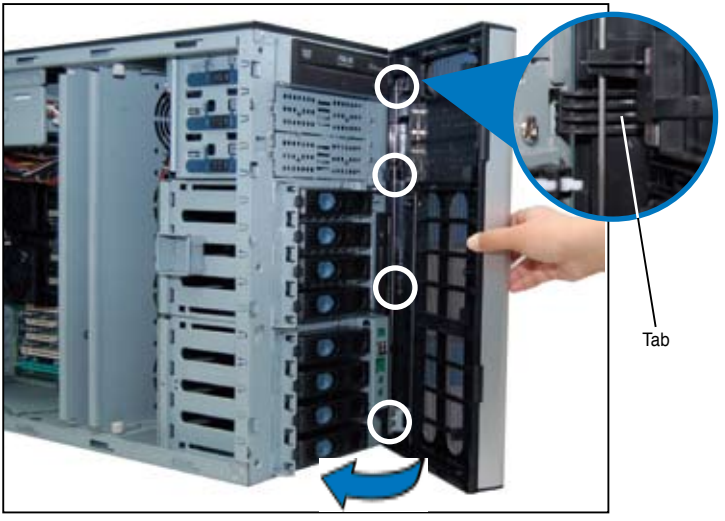
Do not use too much force when removing the front panel assembly.



2.5.2 Reinstalling the front panel assembly

To reinstall the front panel assembly (front bezel and front panel cover):

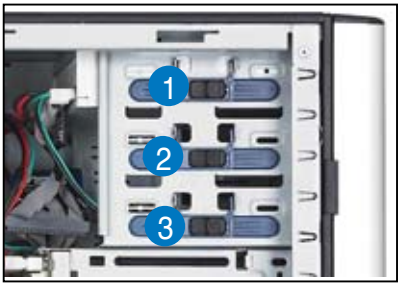
1. Insert the four hinge-like tabs to the holes on the right edge of the chassis.
2. Swing the front panel to the left and fit the four (4) hooked tabs to the left side of the chassis until the tabs snap back in place.



2.6 5.25-inch drives

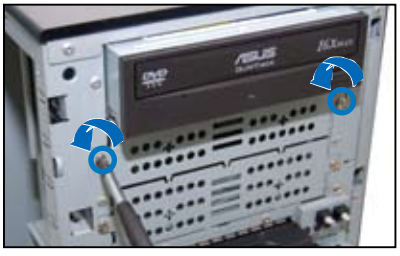
If you have previously used and powered up the system, and that it may be connected to an AC power source, make sure to unplug the power cable before installing or removing any system components. Failure to do so may cause damage to the motherboard and other system components!

Three 5.25-inch drive bays are located on the upper front part of the chassis. An optical drive that comes standard with the system package occupies the uppermost bay (labeled 1). The two lower bays (labeled 2 and 3) are available for additional 5.25-inch devices.



To install a 5.25-inch drive:

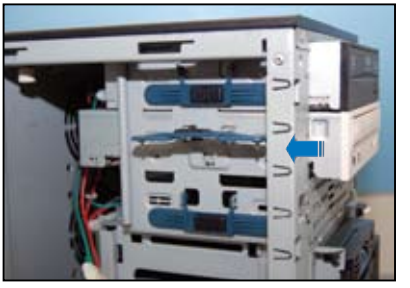
1. Use a Phillips (cross) screwdriver to remove the screws that secure the metal cover of the bay where you want to install the drive.



2. Push the bay lock leftward.

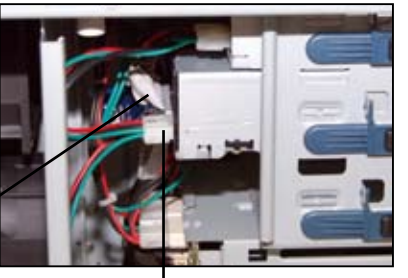
3. Move upward to release the bay lock.

4. Push the optical drive all the way to the depth of the bay. Make sure the screw holes on the optical drive match the ones on the chassis and the front edge of the optical drive align with the bay edge.

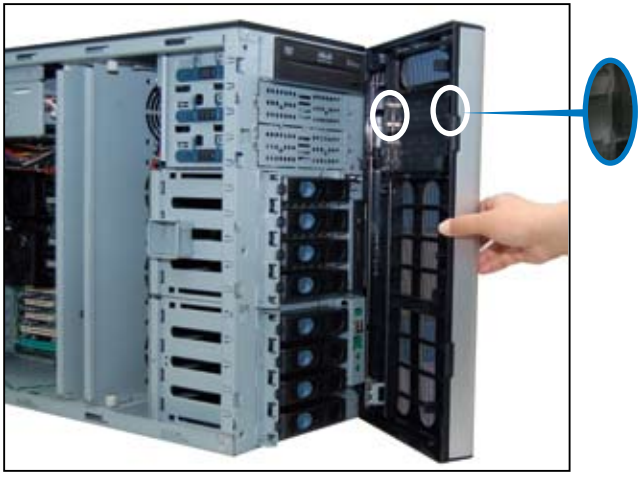


5. Slide the bay lock to the right until it clicks in place and secures the drive.

5. Connect the IDE cable to the IDE connector on the back of the drive.
6. Connect a 4-pin plug from the power supply to the power connector on the back of the drive.



7. On the front panel assembly, detach the plastic bay cover opposite the 5.25-inch drive that you installed by pressing the two hooked tabs on each side of the bay cover.



8. Reinstall the front panel assembly when done. Refer to section “2.5.2 Reinstalling the front panel assembly” for instructions.

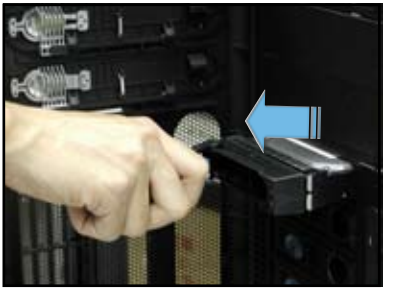
2.7 Hard disk drives

2.7.1 Installing a hot-swap SATA/SAS HDD

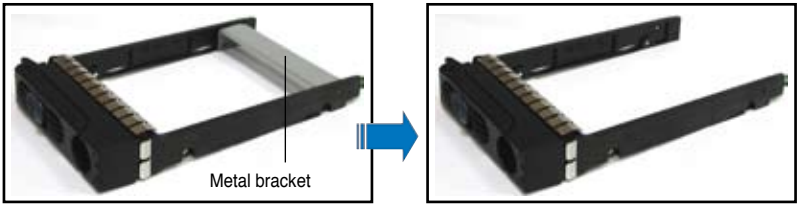
Follow the instructions in this section to install a hot-swap SAS/SATA hard disk drive (HDD).

1. Open the front bezel to access the hot-swap drive trays.
2. Release a drive tray by pushing the spring lock to the right, then pulling the tray lever outward. The drive tray ejects slightly after you pull out the lever.

3. Firmly hold the tray lever and pull the drive tray out of the bay.

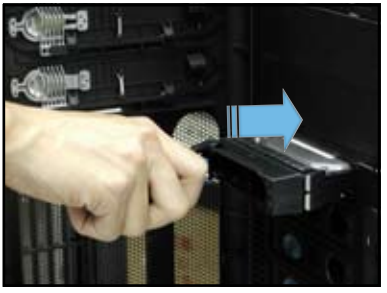


4. An empty drive tray requires a metal bracket for support. Use a Phillips (cross) screwdriver to remove the bracket when you are ready to install a hard disk in the drive tray.



5. Place a SATA or SAS hard disk to the drive tray, and secure it with four screws.

6. Carefully insert drive tray and push it all the way to the depth of the bay until just a small fraction of the tray edge protrudes.



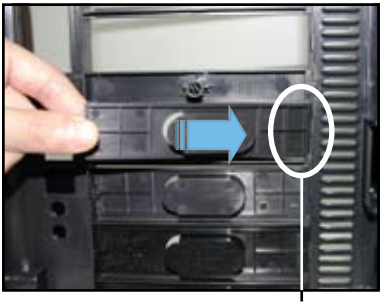
7. Push the tray lever until it clicks, and secures the drive tray in place. The drive tray is correctly placed when its front edge aligns with the bay edge.

2.7.2 Installing an HDD dummy cover

The HDD dummy covers come pre-installed on the front panel bezel. In case you removed the covers, follow these steps to re-install them.

To install an HDD dummy cover:

1. From the inside of the front panel assembly, insert the flat end of a dummy cover into the slot as shown. The end with the hook tab should be close to the front panel LEDs.



2. Press the dummy cover into the slot opening until the hook tab clicks in place.

3. When installed, the dummy cover appears as shown.

2.8 Expansion cards

Refer to this section when installing expansion cards.

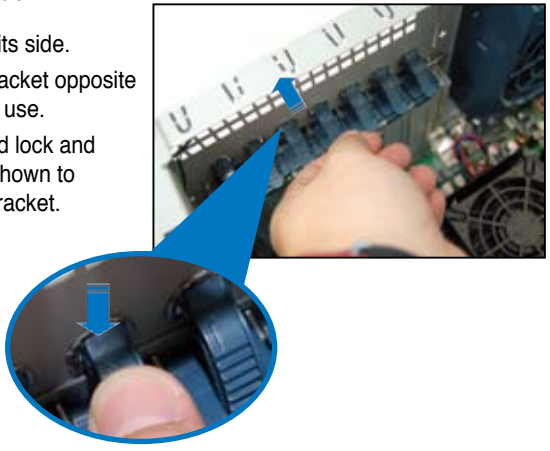
Make sure to unplug the power cord before installing or removing expansion cards. Failure to do so may cause physical injury, and damage to the card and motherboard components!

2.8.1 Installing an expansion card

To install an expansion card:

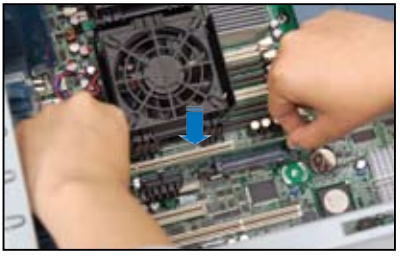
1. Lay the chassis on its side.
2. Locate the metal bracket opposite the slot you want to use.

   Press down the card lock and push it forward as shown to release the metal bracket.

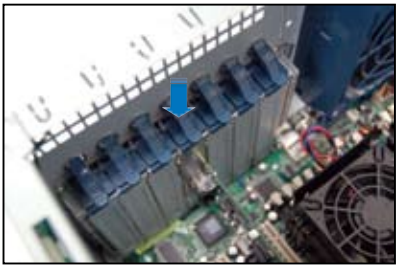


3. Remove the metal bracket.

4. Align the card golden fingers to the slot and its metal bracket to the slot opening on the chassis.
5. Press the card firmly until it is properly seated on the slot.



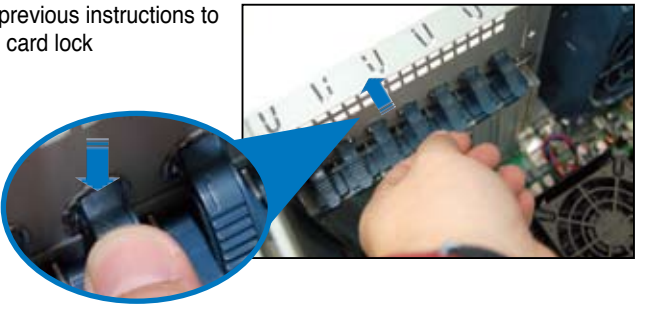
6. Press the card lock to secure the card on the slot. A slight click indicates that the card is locked in place.



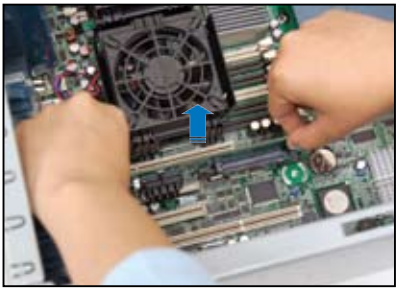
2.8.2 Removing an expansion card

To remove an expansion card:

1. Follow the previous instructions to release the card lock



2. Carefully remove the card from the slot.



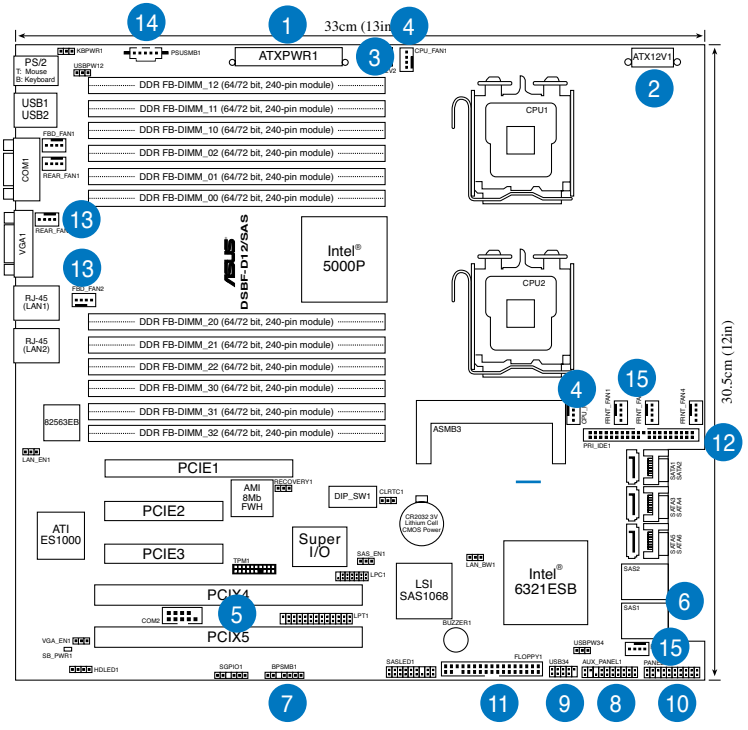
3. After remove the expansion card, press back the card lock.

2.9 Cable connections

- The bundled system cables are pre-connected before shipment. You do not need to disconnect these cables unless you will remove pre-installed components to install additional devices.
- Refer to Chapter 4 for detailed information on the connectors.

2.9.1 Motherboard layouts

DSBF-D12/SAS



Standard cables connected to the motherboard

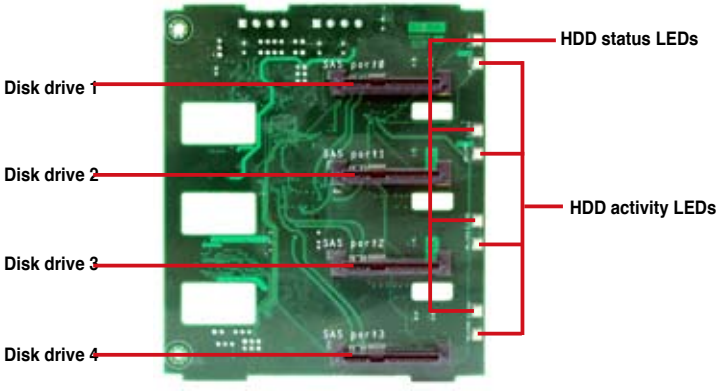
1. 24-pin ATX power
2. 8-pin 12V power
3. CPU fan 1
4. CPU fan 2
5. COM2 port cable
6. SAS connectors
7. SMBus connector
8. Auxiliary panel cable
9. Front USB cable
10. Front panel cable
11. Floppy disk drive
12. Primary IDE cable
13. Rear Fan connector 1/2
14. Power supply SMBus connector
15. FRNT_FAN connector 1/2/3/4

2.9.2 SAS backplane connections

The SAS backplane has four 29-pin SAS connectors to support SAS hard disks. The backplane design incorporates a hot swap feature to allow easy connection or removal of SAS hard disks. The LEDs on the backplane connect to the front panel LEDs to indicate HDD access, HDD failure, thermal failure, or fan failure. See section “1.6 LED information.”

Front side

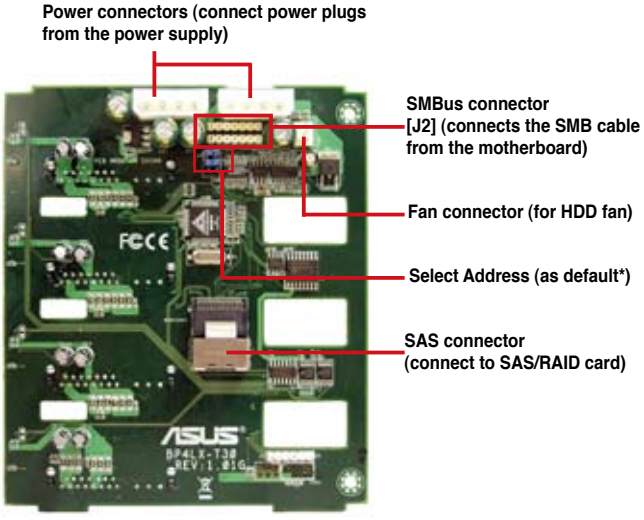
The front side of the SAS backplane faces the front panel when installed. This side includes four SAS connectors for the hot swap drive trays.



Back side

The back side of SAS backplane faces the rear panel when installed. This side includes the power connectors, SAS interfaces for the motherboard SAS connector or the SAS control card, an HDD fan connector, and SMBus connectors.

- the SAS interface of the backplane connects to a SAS/RAID card.


Power connectors (connect power plugs from the power supply)
SMBus connector [J2] (connects the SMB cable from the motherboard)
Fan connector (for HDD fan)
Select Address (as default*)
SAS connector (connect to SAS/RAID card)

Select Address - You do not have to change these jumpers. Please keep the jumpers as default.

Jumper configuration

Backplane 1

2	4	6
1	3	5

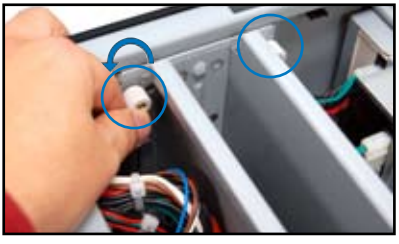
Backplane 2

2	4	6
1	3	5

Connect to the SAS connector on motherboard

Before you connect the SAS cable, you have to remove the system fan module first.

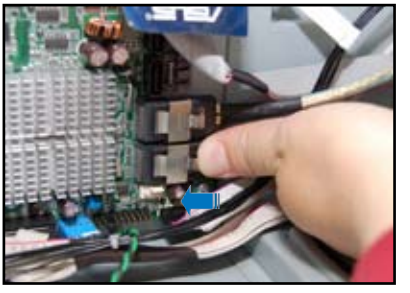
1. Loosen the four screws that secure the system fan module.



2. Remove the system fan module from the chassis.

3. Connect one end of the SAS cable to the SAS connector on the SAS backplane.

4. Connect the other end of the SAS cable to the SAS connector on the motherboard.



5. Repeat the same steps to connect the second SAS cable

2.10 Removable components

You may need to remove previously installed system components when installing or removing system devices, or when you need to replace defective components. This section tells how to remove the following components:

1. Rear fan
2. System fan
3. SAS backplane
4. MemCool FB-DIMM fan kit
5. Floppy disk drive
6. Front I/O board
7. Roller wheels
8. Power supply module

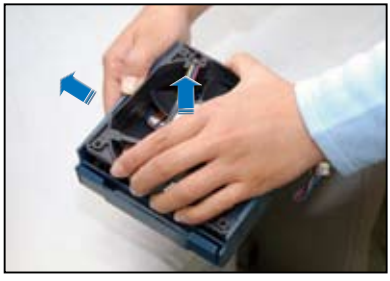
2.10.1 Rear fan

To remove the rear fan:

1. Unplug the rear fan cable from the 3-pin REAR_FAN1 connector on the motherboard.

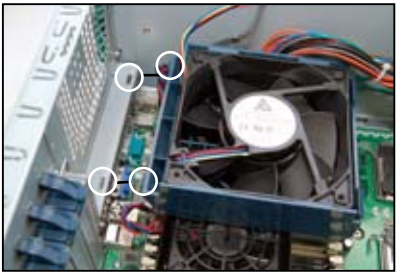
2. Press down the tab as shown and disengage it from the chassis.

3. To replace a new fan, slightly expand the plastic frame and upward release the fan from the module.



To install the rear fan:

1. Align the retaining pins to their respective holes on the chassis.



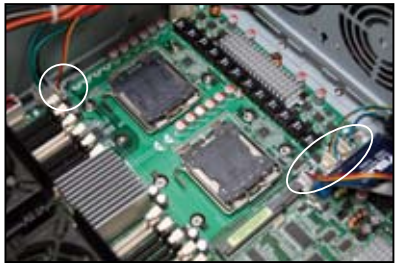
2. Press down the tab as shown and insert the fan into the chassis.

3. Connect the rear fan cable to the REAR_FAN1 connector on the motherboard.

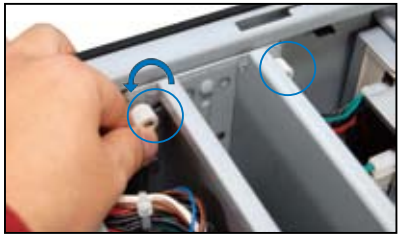
2.10.2 System fan

To remove the system fan:

1. Refer to 2.1.1 to remove the chassis side cover.
2. Unplug the four system fan cables from the motherboard.

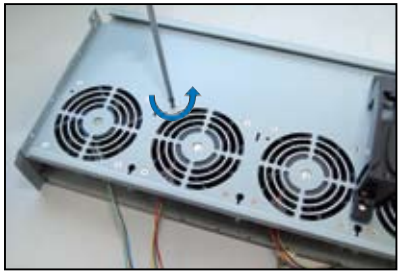


3. Remove the four screws that secure the system fan module.



4. Lift up the system fan module and remove it from the chassis.

5. Unscrew the fan which needs replacing, four screws on each side.



6. Remove the fan kit from the module.

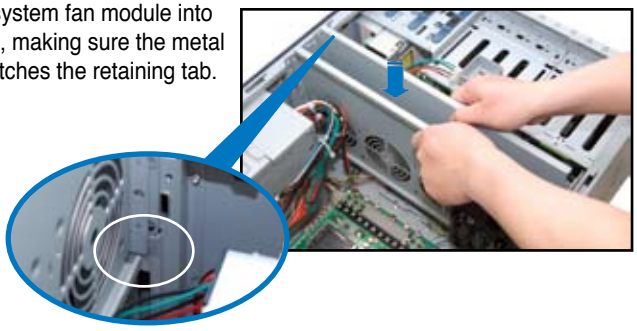
7. Unscrew to remove the fan from the fan kit and replace with a new fan.

To install the system fan module:

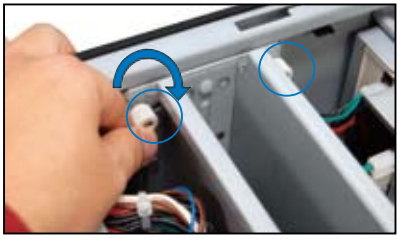
1. Insert the fan kit into the system fan module.

2. Screw to secure the fan, four screws on each side.

3. Install the system fan module into the chassis, making sure the metal bracket matches the retaining tab.

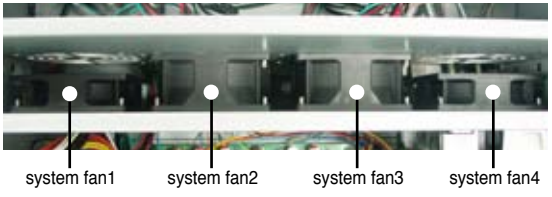


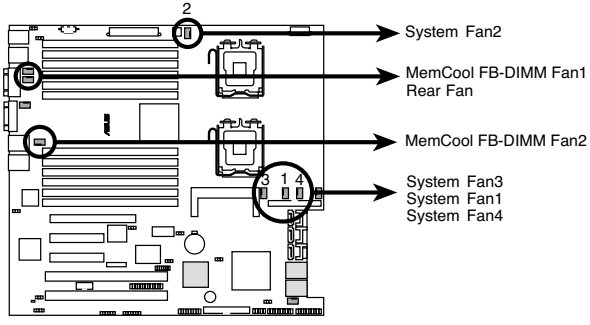
4. Tighten the four screws to secure the system fan module.



5. Plug the four system fan cable to the connectors on the motherboard.

Refer to the illustration below for the locations of the fan connectors.





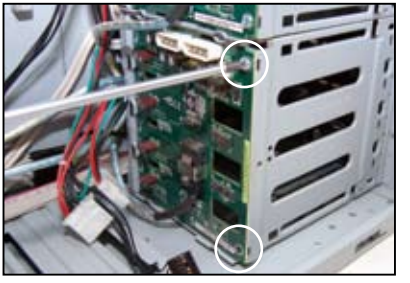
2.10.3 SAS backplane

To remove the SAS backplane:

1. Refer to 2.10.2 to remove the system fan module.
2. Unplug all the cables from the SAS backplane.

When disconnecting a cable, hold and firmly pull at the plug end. Pulling the cable only may damage the cable.

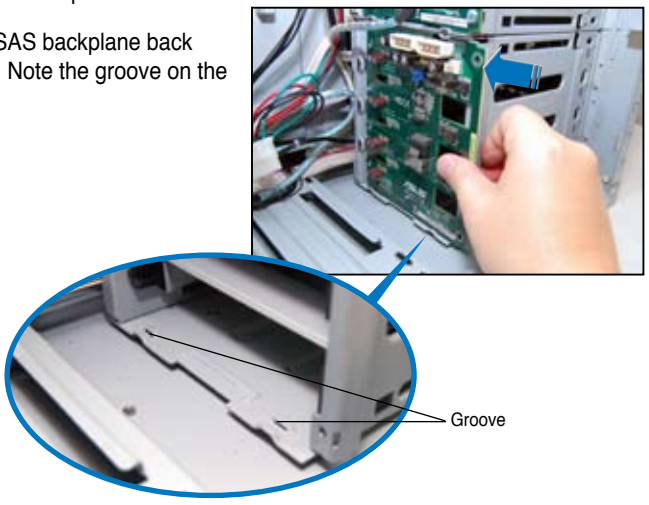
3. Loosen the two screws on the SAS backplane.



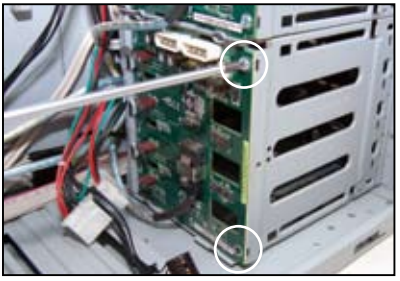
4. Leftward pull the SAS backplane out of the chassis.

To install the SAS backplane:

1. Slide the SAS backplane back into place. Note the groove on the bottom.



2. Tighten the two screws to secure the SAS backplane.



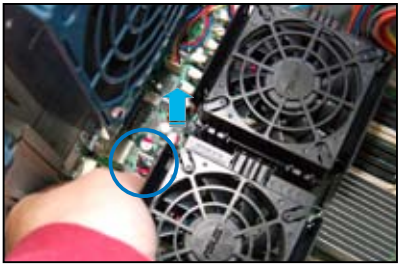
3. Connect all the related cables to the SAS backplane.

2.10.4 MemCool FB-DIMM fan kit

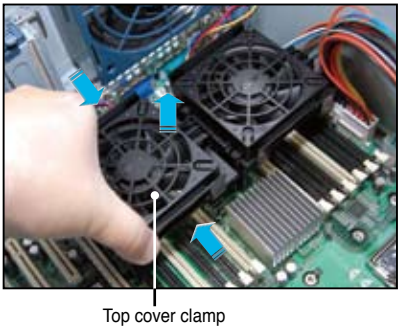
The FB-DIMMs generate heat during continued operation. To ensure optimum thermal condition and performance, install the optional MemCool FB-DIMM fan.

To remove the optional FB-DIMM fan:

1. Disconnect the FB-DIMM cable from the FBD_FAN1 connector on the motherboard.



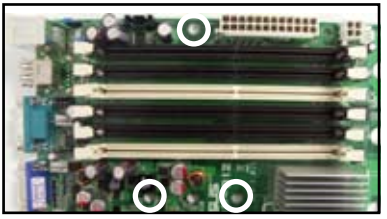
2. Grip the top cover clamps until the top cover hooks are released, then carefully lift the top cover while supporting the fan base with your free hand.



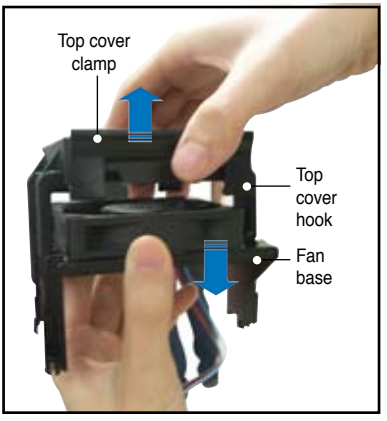
3. Carefully lift the fan base.

To install the optional FB-DIMM fan:

1. Locate the three FB-DIMM fan holes on the motherboard.

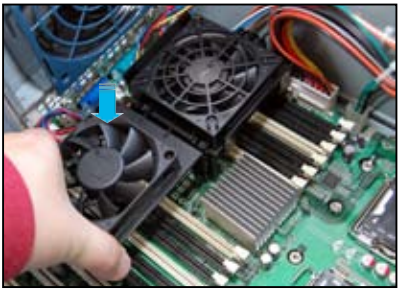


2. Disengage the fan top cover from the fan base. You can do this by firmly gripping the top cover by the clamps to release the hooks, then pull up the top cover carefully until it separates from the fan base.



Do not remove the fan from the fan base.

3. Position the fan base over the DIMMs, and insert the fan base legs into the FB-DIMM holes until the legs are securely in place.

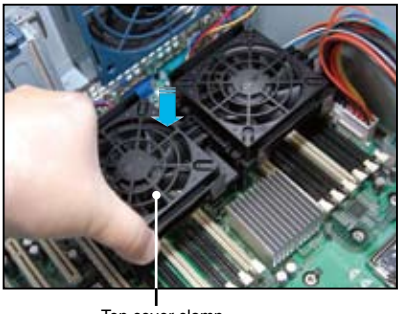


For instructional purposes only, no FB-DIMM is installed on any of the slots.

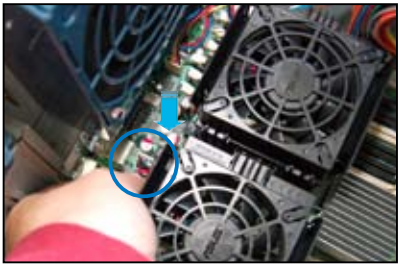
4. Position top cover over the fan base. Insert the top cover legs into the slot on the fan base legs.

   Push down carefully until the legs are securely in place and the top cover hooks snap in place.

Make sure the cables pass through the notch on the fan base.



5. Connect the fan cable to the black 4-pin connector labeled FBD_FAN1.



6. Repeat the preceding steps to install the other Memcool FB-DIMM fan.
7. Connect the fan cable to the black 4-pin connector labeled FBD_FAN2.

2.10.5 Floppy disk drive

You need to remove the front panel assembly before you can remove the floppy disk drive. Refer to section "2.5.1 Removing the front panel assembly" for instructions.

To remove the floppy disk drive:

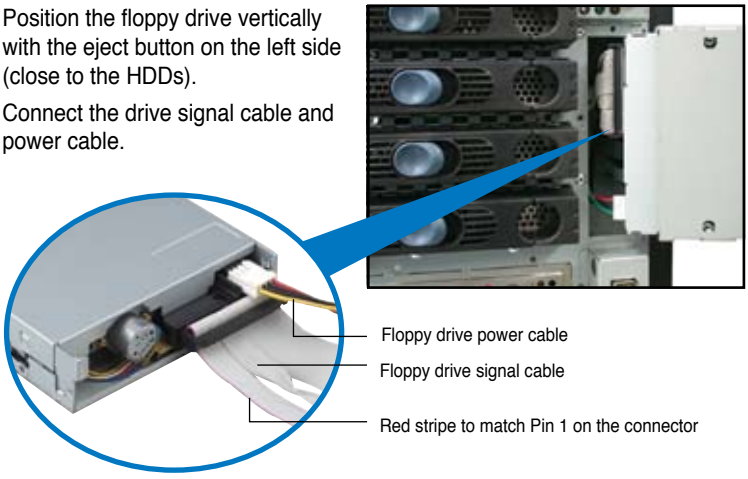
1. Remove the screw that secures the drive to the chassis.

2. Carefully pull out the drive from the chassis until you see the cables connected to the drive.

3. Disconnect the floppy disk cable and power cable from the drive to completely release the drive.

To reinstall a floppy disk drive:

1. Position the floppy drive vertically with the eject button on the left side (close to the HDDs).
2. Connect the drive signal cable and power cable.



3. Carefully push the drive into the bay until the drive cage fits the front edge of the bay.

4. Secure the drive cage with a screw.

2.10.6 Front I/O board

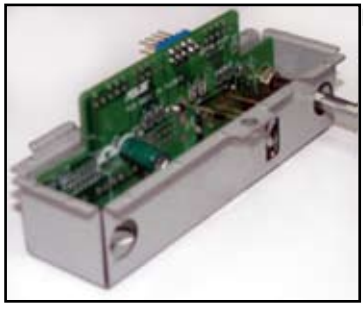
You need to remove the front panel assembly before you can remove the front I/O board. Refer to section “2.5.1 Removing the front panel assembly” for instructions.

To remove the front I/O board:

1. Remove the screw that secures the front I/O board bracket to the front panel.

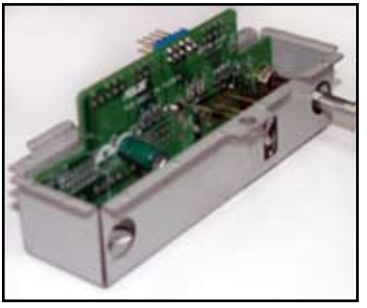
2. Carefully pull out the bracket until you see the cables connected to the I/O board.
3. Disconnect all the cables from the I/O board.

4. Remove the screw that secures the I/O board to the bracket.

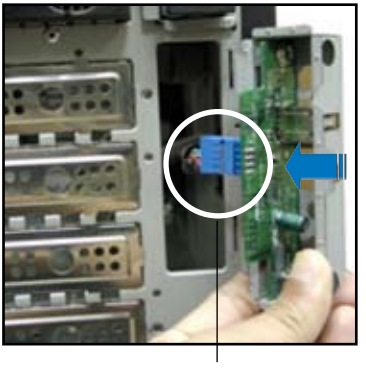


To reinstall the front I/O board:

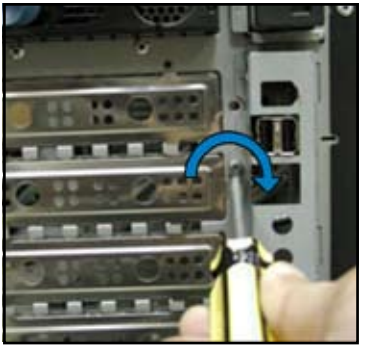
1. Place the I/O board in the bracket, component side up. Secure the front I/O board to the bracket with a screw.



2. Position the I/O board into the bay with the component side to the left (close to the HDDs). Connect the I/O cables to the connectors on the back of the I/O board.



3. Insert the I/O board into the bay until the bracket fits the front edge of the bay.
4. Secure the I/O board bracket with a screw.

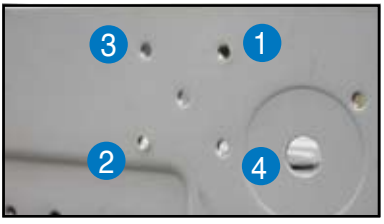


2.10.7 Roller wheels

For convenient transport, install the roller wheels the came with the system package. Each wheel has a brake lock to stabilize the chassis in place.

To install the chassis wheels:

1. Lay the chassis in its side.
2. Locate the designated screw holes for each of the four wheel sets. Take note of the numbers alongside each hole when placing screws.

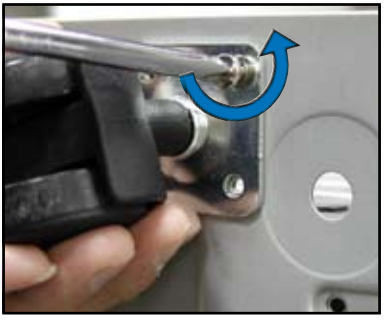


3. Secure each wheel to the bottom of the chassis using four screws.
4. Repeat steps 2 and 3 to install the other three wheels.

Remove the chassis roller wheels if you wish to mount the system to a rack.

To remove the chassis wheels:

1. Lay the system chassis on its side.
2. Use a Phillips screwdriver to remove the screws that secure the wheels to the bottom of the chassis.
3. Repeat step 2 to remove the other three roller wheels.

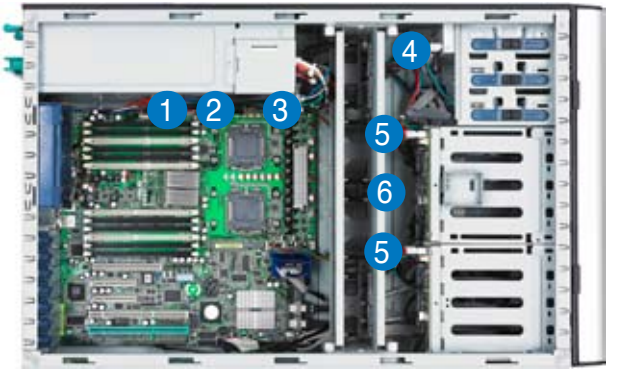


2.10.8 Power supply unit

Refer to this section when removing or installing a power supply unit to the barebone system.

You MUST disconnect all power cable plugs from the motherboard and other installed devices before removing the power supply unit.

The picture below shows the motherboard and device connectors where the power plugs are connected. Refer to the Appendix at the end of this document for the power supply specifications.

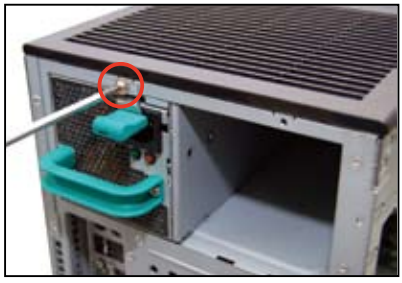


1. 24-pin ATX (motherboard power connector)
2. 4-pin +12V (motherboard power connector, hidden behind the cables)
3. 8-pin +12V (motherboard power)
4. 4-pin plug (optical drive)
5. 2 x 4-pin plugs (SAS backplane)
6. 4-pin plug (floppy disk drive, hidden behind the backplane)

Make sure to unplug ALL power cables from the system devices before removing the power supply unit.

To uninstall a power supply module:

1. Refer to 2.1.1 to remove the chassis side cover.
2. Locate the power supply modules on the rear panel, and select the module that you want to remove. Unscrew the power supply module.

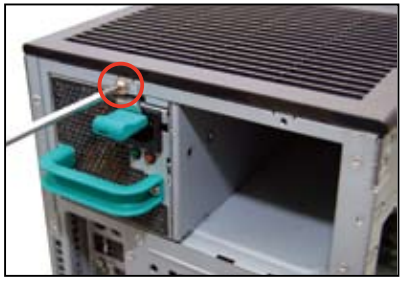


3. Hold the module lever and press the latch on the inner side to release the module. Firmly pull the lever to slide the power supply module out of the chassis.

To install a power supply module:

1. Hold the module lever and press the latch on the inner side to insert the module into the power supply module bay until it clicks in place.

2. Screw to secure the power supply module.



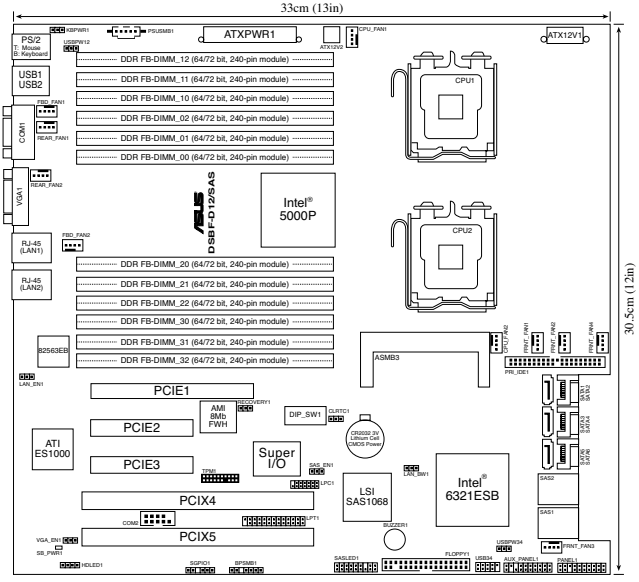
Chapter 3

This chapter gives information about the motherboard that comes with the server. This chapter includes the motherboard layout, jumper settings, and connector locations.

Motherboard info

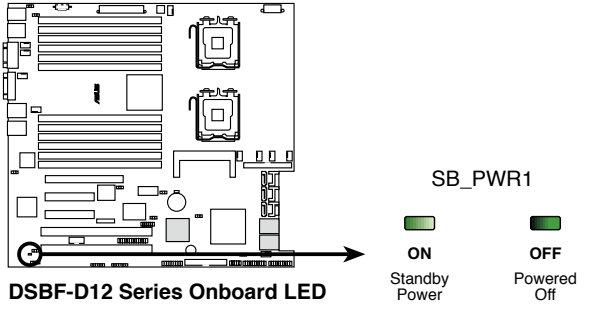
3.1 Motherboard layout

DSBF-D12/SAS model



Onboard LED

The motherboard comes with a standby power LED. The green LED lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.



DSBF-D12 Series Onboard LED

If the ATX12V2 connector is not connected, the REAR_FAN1/2, FRNT_FAN1/2/3/4, and FBD_FAN1/2 will not work and the system cannot power on.

Layout contents

Jumpers	Page
1. Clear RTC RAM (CLRTC1)	3-5
2. LAN bandwidth setting (3-pin LAN_BW1)	3-6
3. USB device wake-up (3-pin USBPW12, USBPW34)	3-6
4. Keyboard power (3-pin KBPWR1)	3-7
5. VGA controller setting (3-pin VGA_EN1)	3-7
6. LAN controller setting (3-pin LAN_EN1)	3-8
8. Onboard storage setting (3-pin SAS_EN1)	3-8
9. Force BIOS recovery setting (3-pin RECOVERY1)	3-9

Switch	Page
1. DIP switch (DIP_SW1)	3-10

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5. Video Graphics Adapter port	3-11
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3.2 Jumpers

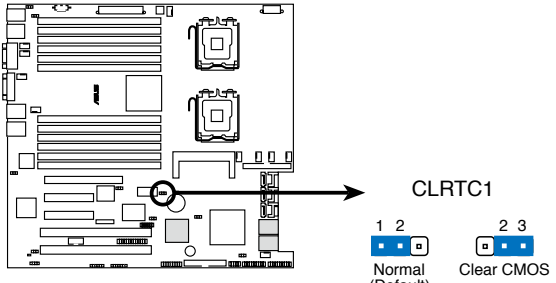
1. Clear RTC RAM (CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Reinstall the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

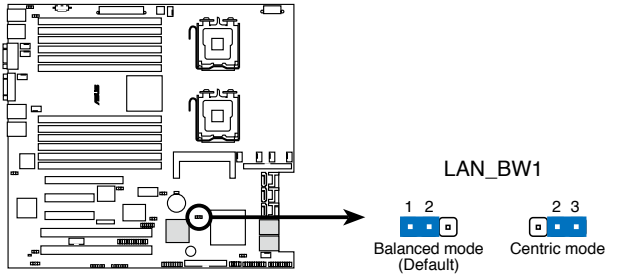
Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



DSBF-D12 Series Clear RTC RAM

2. LAN bandwidth setting (3-pin LAN_BW1)

This jumper allows you to set the LAN bandwidth setting for more efficient IP load distribution.

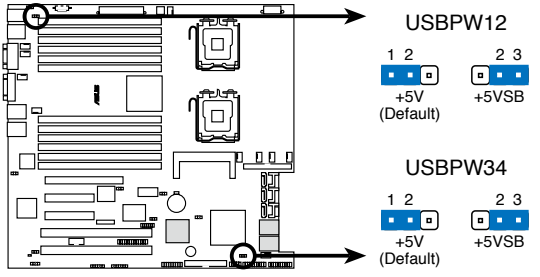


DSBF-D12 Series LAN bandwidth setting

Balance Mode: It's x8 link between MCH and ESB2;
LAN Centrical Mode: It's x4 link between MCH and ESB2.

3. USB device wake-up (3-pin USBPW12, USBPW34)

Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S4 sleep mode (no power to CPU, DRAM in slow refresh, power supply in reduced power mode).

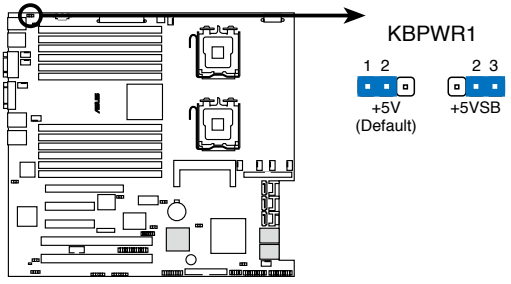


DSBF-D12 Series USB device wake up

- The USB device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB port; otherwise, the system will not power up.
- If you are using Windows® 2000, you need to install Service Pack 4 to wake up the system from S4 sleep mode.
- The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

4. Keyboard power (3-pin KBPWR1)

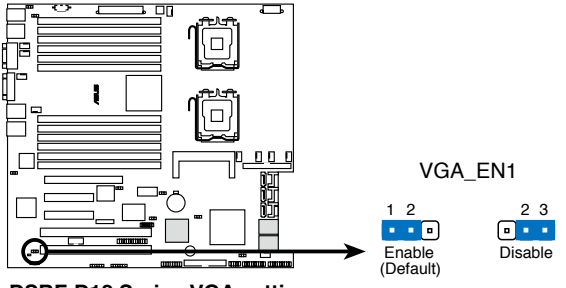
This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS.



DSBF-D12 Series Keyboard power setting

5. VGA controller setting (3-pin VGA_EN1)

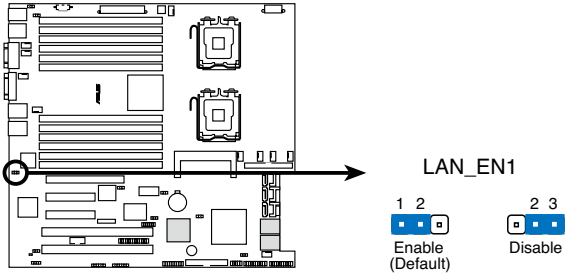
These jumpers allow you to enable or disable the onboard VGA controller. Set to pins 1-2 to activate the VGA feature.



DSBF-D12 Series VGA setting

6. LAN controller setting (3-pin LAN_EN1)

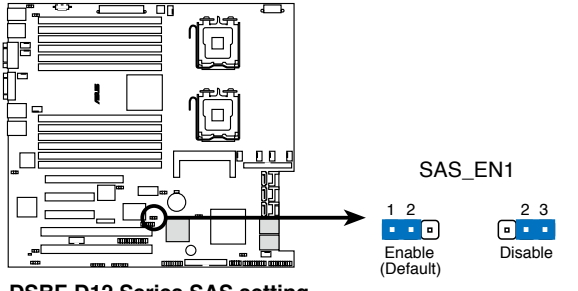
This jumper allows you to enable or disable the onboard Intel® 6321 Gigabit LAN controller. Set to pins 1-2 to activate the Gigabit LAN feature.



DSBF-D12 Series LAN1_EN setting

7. Onboard storage setting (3-pin SAS_EN1)

This jumper allows you to enable or disable the onboard LSI1068 SAS controller.



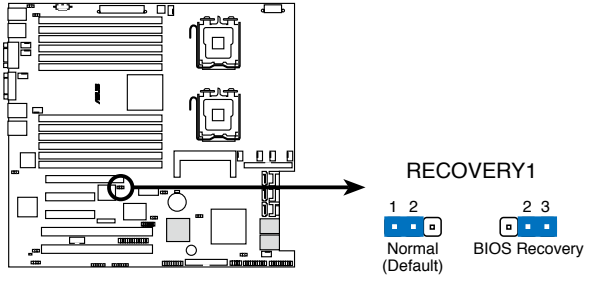
DSBF-D12 Series SAS setting

8. Force BIOS recovery setting (3-pin RECOVERY1)

This jumper allows you to quickly update or recover the BIOS settings when it becomes corrupted.

To update the BIOS:

1. Prepare a floppy disk that contains the latest BIOS for the motherboard and the Phoenix Phlash16 utility. Make sure you download the correct BIOS for your motherboard model.
2. Set the jumper to pins 2-3.
3. Insert the floppy disk then turn on the system to update the BIOS.
4. Shut down the system.
5. Set the jumper back to pins 1-2.
6. Turn on the system.

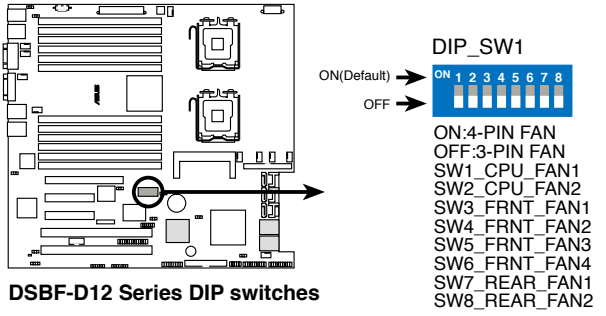


DSBF-D12 Series BIOS recovery setting

Refer to section "4.1.3 ASUS Crashfree BIOS 2 utility" for more information.

3.3 Switch

This motherboard features a DIP switch for fan pin selection.



DSBF-D12 Series DIP switches

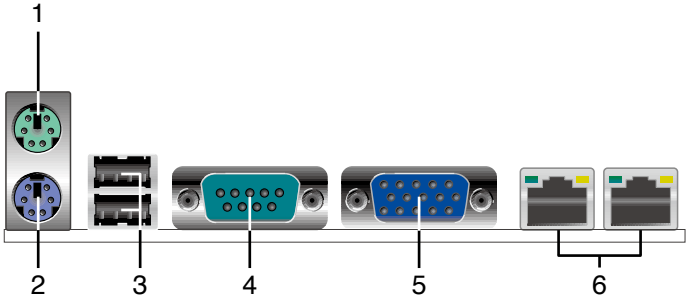
The following table shows the corresponding switch for each fan connector.

Switch	Fan connector
1	CPU_FAN1
2	CPU_FAN1
3	FRNT_FAN1
4	FRNT_FAN2
5	FRNT_FAN3
6	FRNT_FAN4
7	REAR_FAN1
8	REAR_FAN2

- If you use a 4-pin fan but set the DIP switch for a 3-pin fan, the fan you installed may not work.
- If you use a 3-pin fan but set the DIP switch for a 4-pin fan, the fan controll will not work and the fan you installed will always run at full speed.

3.4 Connectors

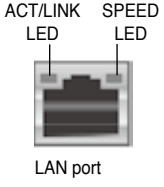
3.4.1 Rear panel connectors



1. **PS/2 mouse port (green). This port is for a PS/2 mouse.**
2. **PS/2 keyboard port (purple). This port is for a PS/2 keyboard.**
3. **USB 2.0 ports 1 and 2. These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.**
4. **Serial (COM1) port.** This 9-pin communication port is for pointing devices or other serial devices.
5. **Video Graphics Adapter port.** This port is for a VGA monitor or other VGA-compatible devices.
6. **LAN (RJ-45) ports.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
GREEN	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1000 Mbps connection

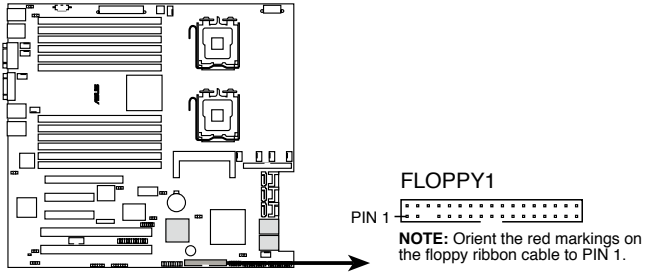


3.4.2 Internal connectors

1. Floppy disk drive connector (34-1 pin FLOPPY1)

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.

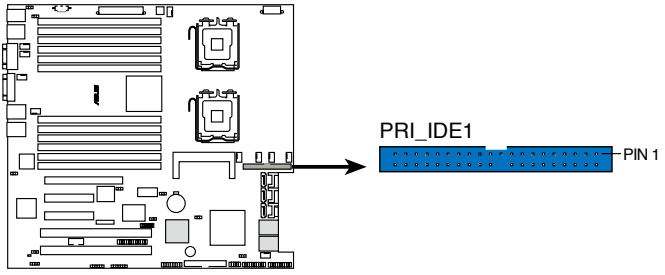


DSBF-D12 Series Floppy disk drive connector

2. IDE connector (40-1 pin PRI_IDE1)

This connector is for an Ultra DMA 100/66 signal cable. The Ultra DMA 100/66 signal cable has three connectors: a blue connector for the primary IDE connector on the motherboard, a black connector for an Ultra DMA 100/66 IDE slave device (optical drive/hard disk drive), and a gray connector for an Ultra DMA 100/66 IDE master device (hard disk drive). If you install two hard disk drives, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings.

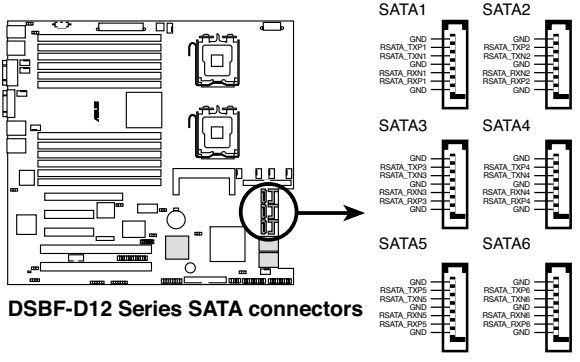
- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 100/66 IDE devices.



DSBF-D12 Series IDE connector

3. Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4, SATA5, SATA6)

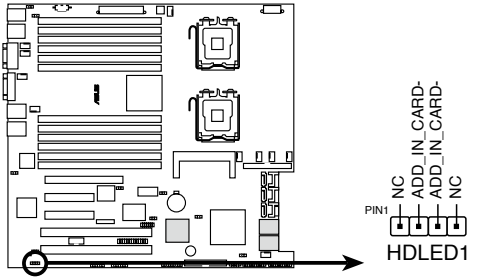
These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives.



DSBF-D12 Series SATA connectors

4. Hard disk activity LED connector (4-pin HDLED1)

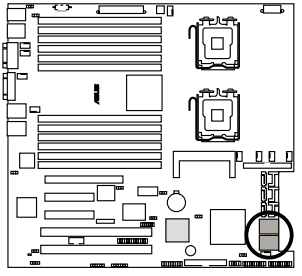
This connector is used to connect to a hard disk drive active LED connector on the SCSI or RAID card.



DSBF-D12 Series storage card activity LED connector

5. Mini-SAS connectors

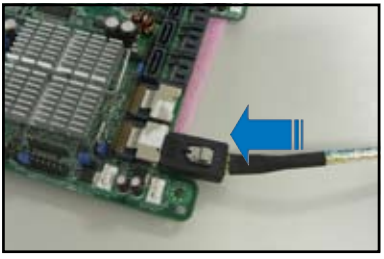
This motherboard comes with two Serial Attached SCSI (SAS) connectors, the next-generation storage technology that supports both Serial Attached SCSI and Serial ATA. Each connector supports up to four (4) devices.



DSBF-D12 Series MINI SAS connectors

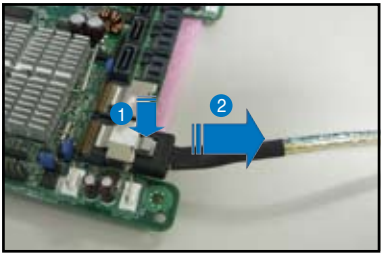
To connect the mini-SAS cable:

Plug in the mini-SAS cable to the mini-SAS connector until the cable lock snaps in place.



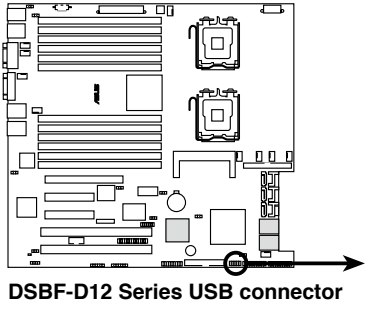
To disconnect the mini-SAS cable:

1. With your thumb, push down the cable lock to release.
2. While still keeping your thumb's grip on the cable lock, carefully pull away the cable from the connector



6. USB connector (10-1 pin USB34)

This connector is for USB 2.0 ports. Connect the USB module cable to this connector, then install the module to a slot opening at the back of the system chassis. This USB connector complies with USB 2.0 specification that supports up to 480 Mbps connection speed.

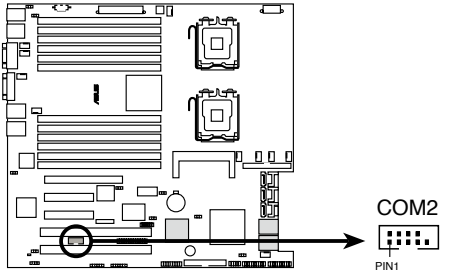


DSBF-D12 Series USB connector

The USB port module is purchased separately.

7. Serial port connector (10-1 pin COM2)

This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



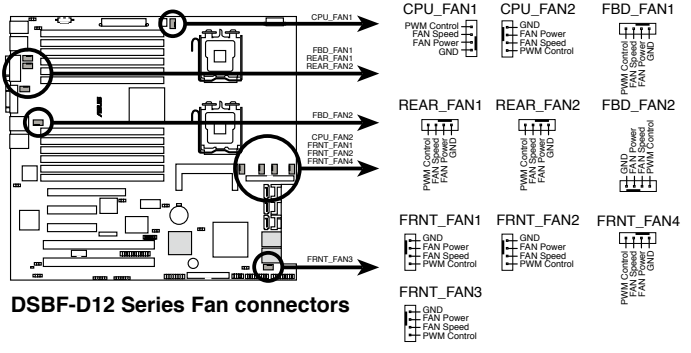
DSBF-D12 Series Serial port connector

The serial port module is purchased separately.

8. CPU and system fan connectors (4-pin CPU_FAN1/2, REAR_FAN1/2, FRNT_FAN1/2/3/4, FBD_FAN1/2)

The fan connectors support cooling fans of 350 mA ~ 740 mA (8.88 W max.) or a total of 2.1 A ~ 4.44 A (53.28 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

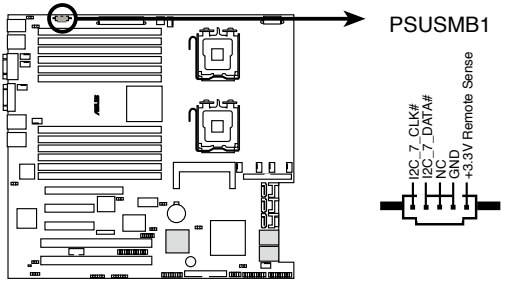
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!



DSBF-D12 Series Fan connectors

9. Power supply SMBus connector (5-pin PSUSMB1)

This connector is for the power supply SMB cable, if your power supply supports the SMBus function.

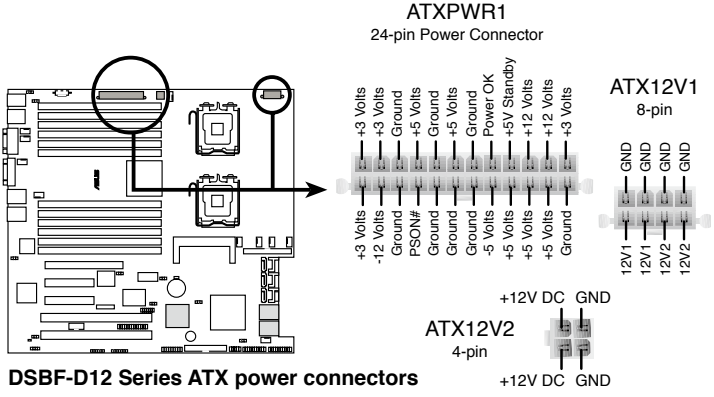


DSBF-D12 Series Power supply SMBus connector

10. SSI power connectors (24-pin ATXPWR1, 8-pin ATX12V1, 4-pin ATX12V2)

These connectors are for SSI power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

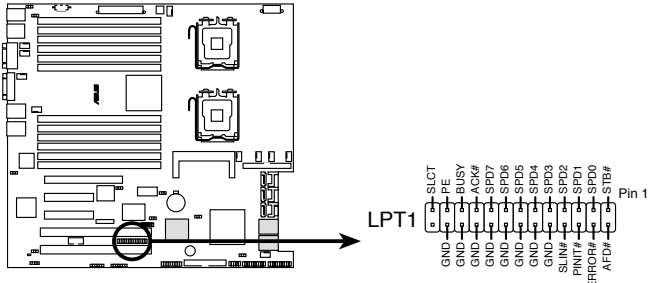
- For a fully configured system, we recommend that you use an SSI 12 V-compliant power supply unit (PSU) for LGA771-socket Intel® Xeon Dual Core processors (Bensley platform).
- Do not forget to connect the 24+8+4-pin power plugs; otherwise, the system will not boot up.
- Use of a PSU with a higher power output is recommended when configuring a system with more power consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- You must install a PSU with a higher power rating if you intend to install additional devices.



DSBF-D12 Series ATX power connectors

11. Parallel port connector (26-1 pin LPT1)

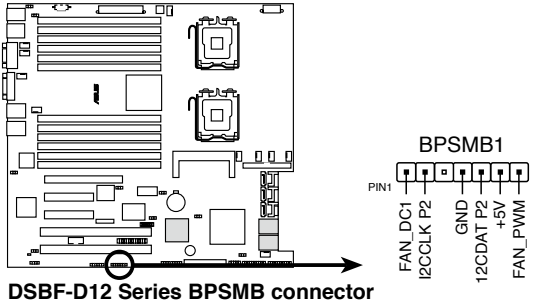
This connector is for a parallel port. Connect the parallel port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



DSBF-D12 Series Parallel port connector

12. Backplane SMBus connector (7-1 pin BPSMB1)

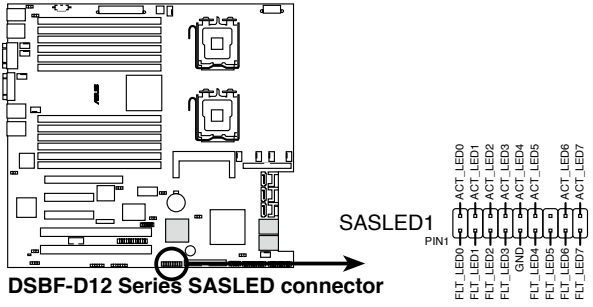
This connector allows you to connect SMBus (System Management Bus) devices. Devices communicate with an SMBus host and/or other SMBus devices using the SMBus interface.



DSBF-D12 Series BPSMB connector

13. SAS LSI1068 ports LED connector (18-1 pin SASLED1)

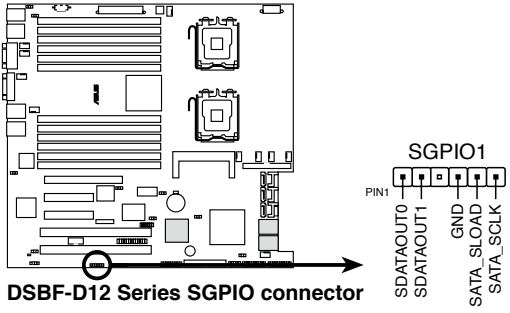
This connector is for the front panel LED port indicator that shows the SAS HDD status.



DSBF-D12 Series SASLED connector

14. Serial General Purpose Input/Output connector (6-1 pin SGPIO1)

This connector is used for the SGPIO peripherals for the LSI MegaRAID SATA LED.

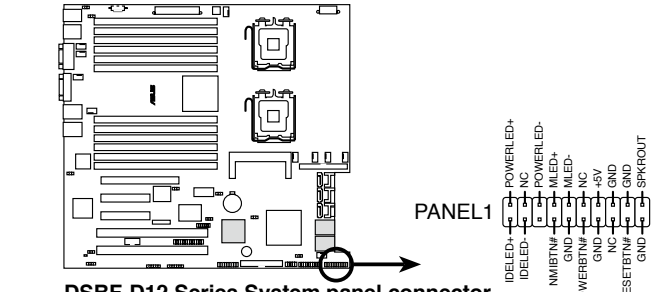


DSBF-D12 Series SGPIO connector

15. System panel connector (20-1 pin PANEL1)

This connector supports several chassis-mounted functions.

The system panel connector is color-coded for easy connection.



DSBF-D12 Series System panel connector

- **System power LED (Green 3-pin PLED)**

  This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (Red 2-pin IDE_LED)**

  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **System warning speaker (Orange 4-pin SPEAKER)**

  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **ATX power button/soft-off button (Yellow 2-pin PWRSW)**

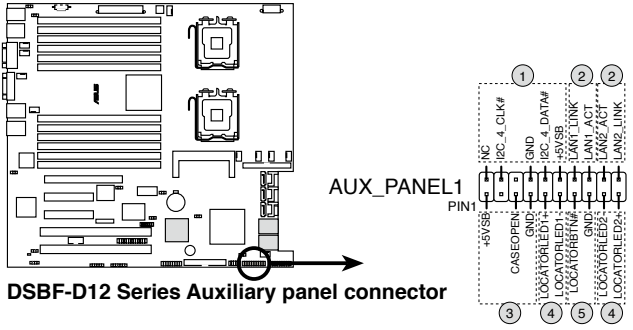
  This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button (Blue 2-pin RESET)**

  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

16. System panel auxiliary connector (20-2 pin AUX_PANEL1)

This connector is for additional front panel features including front panel SMB, locator LED and switch, chassis intrusion, and LAN LEDs.



DSBF-D12 Series Auxiliary panel connector

1 Front panel SMB (6-1 pin FPSMB)

These leads connect the front panel SMBus cable.

2 LAN activity LED (2-pin LAN1_LED, LAN2_LED)

These leads are for Gigabit LAN activity LEDs on the front panel.

3 Chassis intrusion (2 pin CHASSIS)

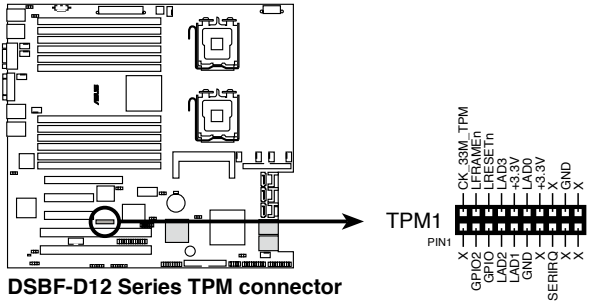
These leads are for the intrusion detection feature for chassis with intrusion sensor or microswitch. When you remove any chassis component, the sensor triggers and sends a high-level signal to these leads to record a chassis intrusion event.

4/5 Locator LED (6-pin LOCATOR)

These leads are for the locator switch and LED on the front panel.

17. TPM connector (20-1 pin TPM)

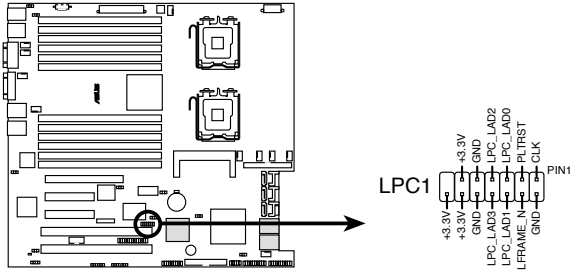
This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.



DSBF-D12 Series TPM connector

18. LPC debug card connector.(14-1 pin LPC1)

This is a low pin count interface used to plug in the LPC debug card.



DSBF-D12 Series LPC debug card connector

Chapter 4

This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

BIOS setup

4.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup:

1. **Phoenix Phlash16 BIOS Flash Utility** (Updates the BIOS in DOS mode using a bootable floppy disk.)
2. **ASUS CrashFree BIOS 2 (**Recovers the BIOS using a bootable floppy disk when the BIOS file fails or gets corrupted.)
3. **ASUS Update** (Updates the BIOS in Windows® environment.)

Refer to the corresponding sections for details on these utilities.

- **ASUS Update** is included in the support CD Rev. 2.0 and above. Download **ASUS Update** from the ASUS website (www.asus.com) if needed.
- Save a copy of the original motherboard BIOS file to a bootable floppy disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or Phoenix Phlash16 BIOS utilities. Refer to page 4-3 for details.

4.1.1 Creating a bootable floppy disk

1. Do the following to create a bootable floppy disk.

   DOS environment

   a. Insert a 1.44MB floppy disk into the drive.
   b. At the DOS prompt, type **`format A:/S`** then press <Enter>.

4.1.2 Updating the BIOS using the Phoenix Phlash16 Utility

The Basic Input/Output System (BIOS) can be updated using the Phoenix Phlash16 Utility. Follow these instructions to update the BIOS using this utility.

1. Download the latest BIOS file from the ASUS web site. Rename the file to BIOS.WPH. Save the file to a floppy disk.

Make sure you copy the correct BIOS file for the specific model of your motherboard. Save only the updated BIOS file in the floppy disk to avoid loading the wrong BIOS file.

2. Copy the Phoenix Phlash16 (phlash16.exe) utility from the Software folder of the support CD to the floppy disk with the latest BIOS file.
3. Boot the system in DOS mode using the bootable floppy disk you created earlier.
4. When the A:> appears, replace the bootable floppy disk with the floppy disk containing the new BIOS file and the Phoenix Phlash16 Utility.
5. At the prompt, type the following command string:

   `phlash16 /mode=3BIOS.WPH.`

6. The Phoenix Phlash16 Utility automatically updates the BIOS.

Do not turn off or reset the system during the flashing process!

7. Restart the system after the utility completes the updating process. Make sure you remove the floppy disk from the drive

When you execute the Phlash16.exe program and the screen displays "Cannot flash if Memory Managers" error message, refer to the Appendix to solve the problem.

4.1.3 ASUS CrashFree BIOS 2 utility

The ASUS CrashFree BIOS 2 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using a floppy disk.

Prepare a blank floppy disk before using this utility.

Recovering the BIOS from a floppy disk

A. Prepare the recovery diskette:

1. Insert the motherboard floppy disk to a PC, then boot from the support CD; the screen will show several optional items.
2. Select the item “Create the emergent BIOS Recovery diskette”.

```
A)  FreeDOS command prompt
B)  Create LSI 1068 SAS for Win2k/Win2k3 32 bit Driver Disk
C)  Create LSI 1068 SAS for Win2k3 64 bit Driver Disk
D)  Create LSI 1068 SAS for RHEL3 UP6 32 bit Driver Disk
E)  Create LSI 1068 SAS for RHEL3 UP6 64 bit Driver Disk
F)  Create LSI 1068 SAS for RHEL4 UP2 32 bit Driver Disk
G)  Create LSI 1068 SAS for RHEL4 UP2 64 bit Driver Disk
H)  Create the TS700-E4/RX8/RX8 emergent BIOS Recovery diskette
I)  Flash Phoenix BIOS for TS700-E4/RX8/RX8 system
J)  ESB2 ASF Firmware update
K)  Write TS700-E4/RX8/RX8 system FRU

Please choose A TO K:
```

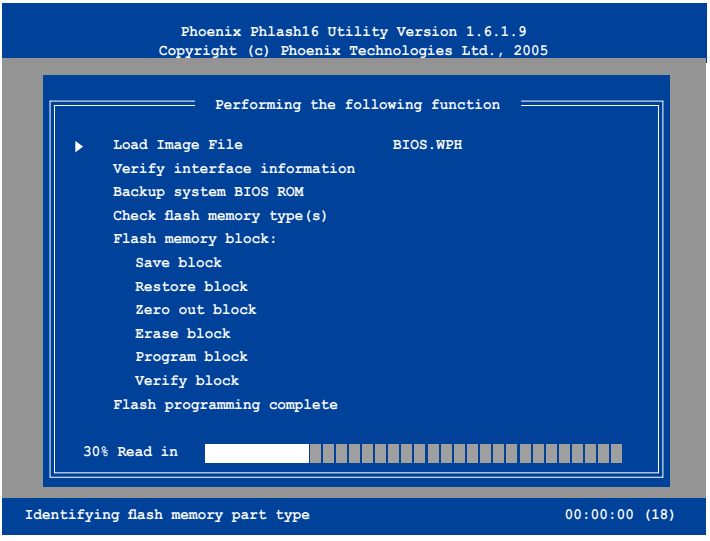
B. To recover the BIOS from a floppy disk:

1. When BIOS corrupted, put this disk in the floppy disk drive, then turn on the machine to boot from the floppy disk.
2. The utility displays the following message and automatically checks the floppy for the recovery information.

```
RN50 DDR1 A21 BIOS
```

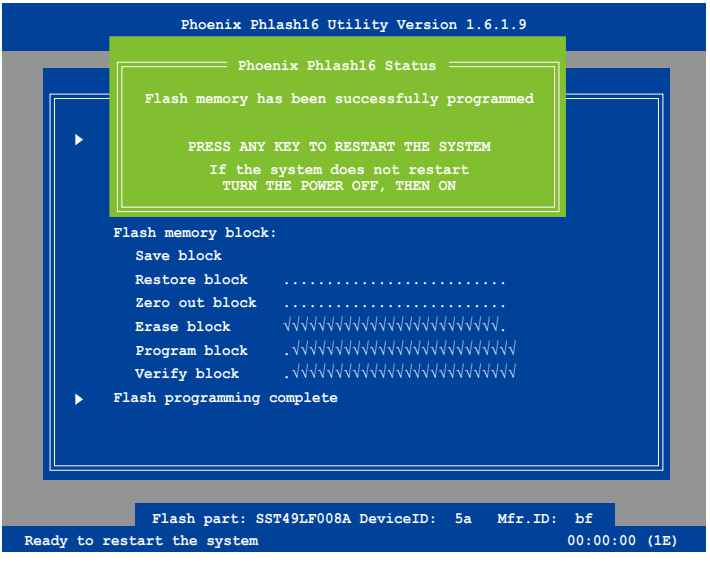
3. When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

Before you recover the BIOS setting, refer to “2.6 Jumpers, Force BIOS recovery setting” for more information.



DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

6. When the utility completes the updating process, a message appears, informing you that the flash memory has been programmed successfully.



7. Press the power button for more than four seconds to turn off the system.

The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the ASUS website (www.asus.com) to download the latest BIOS file.

4.1.4 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- Save the current BIOS file
- Download the latest BIOS file from the Internet
- Update the BIOS from an updated BIOS file
- Update the BIOS directly from the Internet, and
- View the BIOS version information.

This utility is available in the support CD that comes with the motherboard package.

- **ASUS Update** is included in the support CD Rev. 2.0 and above. Download **ASUS Update** from the ASUS website (www.asus.com) if needed.
- ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

Installing ASUS Update

To install ASUS Update:

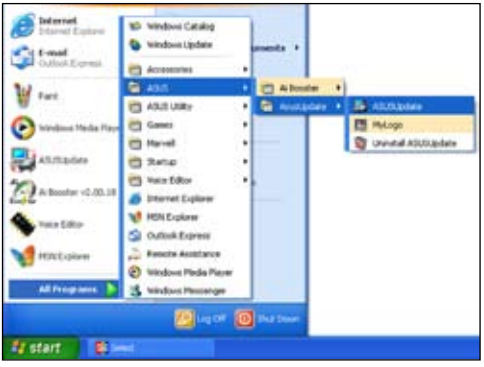
1. Place the support CD in the optical drive. The Drivers menu appears.
2. Click the Utilities tab, then click Install ASUS Update VX.XX.XX.
3. The ASUS Update utility is copied to your system.

Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the **ASUS Update** utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.



Select the Update Method
1. Update/Save BIOS from/to a file
2. Update BIOS from the Internet
3. Download BIOS from the Internet
4. Check BIOS Information
Update BIOS from the Internet
Save current BIOS to a file
Update BIOS from a file
Update BIOS from the Internet
Download BIOS from the Internet
Check BIOS Information
Options

2. Select **Update BIOS** from the Internet option from the drop-down menu, then click **Next**.

Select the Update Server
Before Continue, please make sure that your system is connected to the Internet. You can then choose a web site by yourself or click AutoSelect button. ASUS Update will choose the best site based on network traffic automatically for you.
Passive
Proxy Setting
Auto Select
ftp.asus.com.tw
Back
Cancel
Next

3. Select the ASUS FTP site nearest you to avoid network traffic, or click **Auto**. Select. Click **Next**.

4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.
5. Follow the screen instructions to complete the update process.

The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.

Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

1. Launch the **ASUS Update** utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.
2. Select **Update BIOS** from a file option from the drop-down menu, then click **Next**.

3. Locate the BIOS file from the Open window, then click **Save**.
4. Follow the screen instructions to complete the update process.

4.2 BIOS setup program

This motherboard supports a programmable Low-Pin Count (LPC) chip that you can update using the provided utility described in section “4.1 Managing and updating your BIOS.”

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to “Run Setup.” This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the LPC chip.

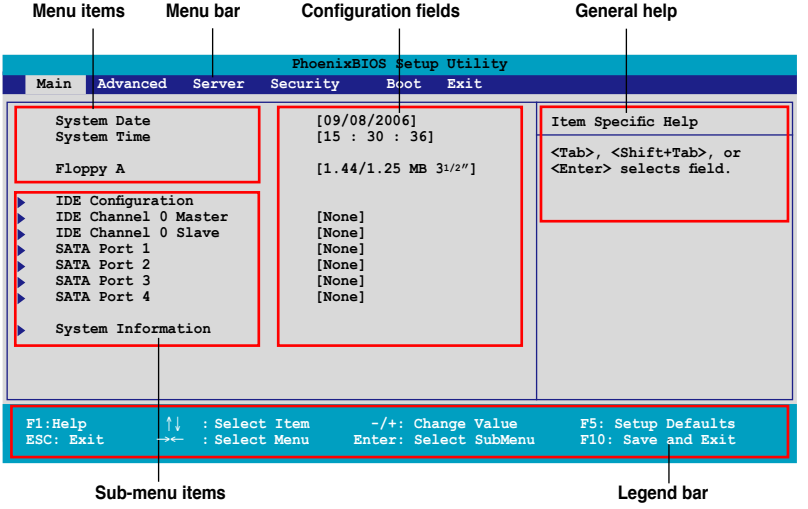
The LPC chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the Load Default Settings item under the Exit Menu. See section “4.8 Exit Menu.”
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard.

4.2.1 BIOS menu screen



4.2.2 Menu bar

The menu bar on top of the screen has the following main items:

Main	For changing the basic system configuration
Advanced	For changing the advanced system settings
Server	For changing the advanced server settings
Security	For changing the security settings
Boot	For changing the system boot configuration
Exit	For selecting the exit options and loading default settings

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

4.2.3 Legend bar

At the bottom of the Setup screen is a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding functions.

Navigation key	Function
<F1>	Displays the General Help screen
<F9>	Loads setup default values
<Esc>	Exits the BIOS setup or returns to the main menu from a sub-menu
Left or Right arrow	Selects the menu item to the left or right
Up or Down arrow	Moves the highlight up or down between fields
Page Down or – (minus)	Scrolls backward through the values for the highlighted field
Page Up or + (plus)	Scrolls forward through the values for the highlighted field
<Enter>	Brings up a selection menu for the highlighted field
<F10>	Saves changes and exit

4.2.4 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting Main shows the Main menu items.

The other items (Advanced, Power, Boot, and Exit) on the menu bar have their respective menu items.

4.2.5 Sub-menu items

A solid triangle before each item on any menu screen means that the iteam has a sub-menu. To display the sub-menu, select the item and press <Enter>.

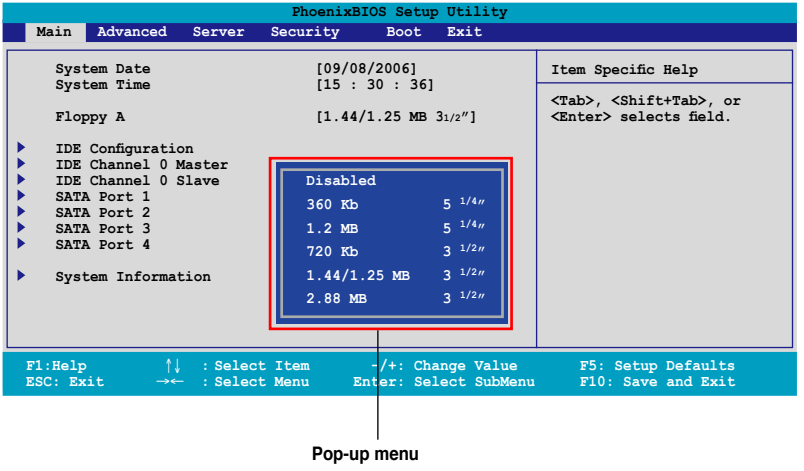
4.2.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to “4.2.7 Pop-up window.”

4.2.7 Pop-up window

Select a menu item then press <Enter> to display a pop-up window with the configuration options for that item.



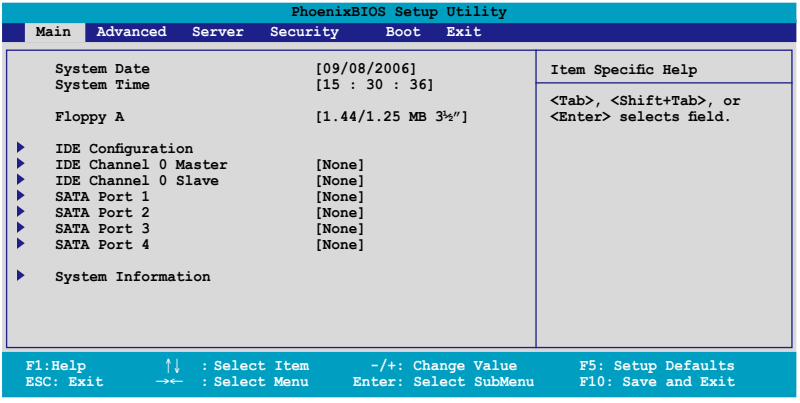
4.2.8 General help

At the top right corner of the menu screen is a brief description of the selected item.

4.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information.

Refer to section "4.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.


PhoenixBIOS Setup Utility
Main Advanced Server Security Boot Exit
System Date [09/08/2006]
System Time [15 : 30 : 36]
Floppy A [1.44/1.25 MB 3½"]
IDE Configuration
IDE Channel 0 Master [None]
IDE Channel 0 Slave [None]
SATA Port 1 [None]
SATA Port 2 [None]
SATA Port 3 [None]
SATA Port 4 [None]
System Information
Item Specific Help
<Tab>, <Shift+Tab>, or <Enter> selects field.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

4.3.1 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

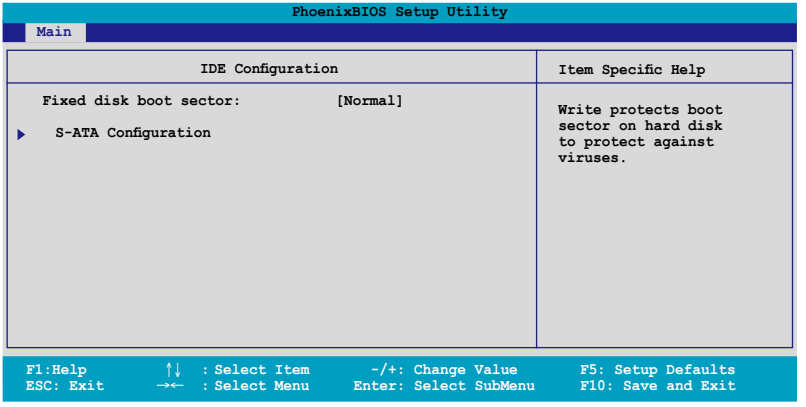
4.3.2 System Time [xx:xx:xx]

Allows you to set the system time.

4.3.3 Floppy A [1.44M, 3½in.]

Sets the type of floppy drive installed.
Configuration options: [Disabled] [360 Kb 5¼"] [1.2 MB 5¼"] [720 Kb 3 ½"] [1.44/1.25 MB 3 ½"] [2.88 MB 3½"]

4.3.4 IDE Configuration

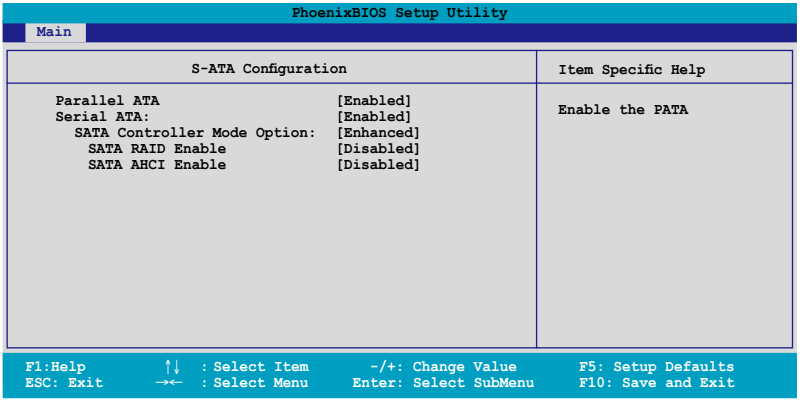

PhoenixBIOS Setup Utility
Main
IDE Configuration
Item Specific Help
Fixed disk boot sector: [Normal]
S-ATA Configuration
Write protects boot sector on hard disk to protect against viruses.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Fixed disk boot sector [Normal]

Setting this item to [Write Protect] prevents write access to the boot sector on the hard disk to protect against viruses. The default setting [Normal] allows write access. Configuration options: [Normal] [Write Protect]

S-ATA Configuration

For the storage of this system is controlled by LSI1068 PCI-X SAS controller, the following items are unavailable. Keep the configuratons as default.


PhoenixBIOS Setup Utility
Main
S-ATA Configuration
Item Specific Help
Parallel ATA [Enabled]
Serial ATA: [Enabled]
SATA Controller Mode Option: [Enhanced]
SATA RAID Enable [Disabled]
SATA AHCI Enable [Disabled]
Enable the PATA
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Parallel ATA [Enabled]

Allows you to enable or disable the parallel ATA function.
Configuration options: [Disabled] [Enabled]

Native Mode Operation [Auto]
Allows you to choose the native mode for ATA.
Configuration options: [Auto] [Serial ATA]

The above item appears only when the SATA Controller Mode Option is set to [Compatible]

Serial ATA [Enabled]
Allows you to enable or disable the Serial ATA function.
Configuration options: [Disabled] [Enabled]

SATA Controller Mode Option [Enhanced]
Allows selection of the Serial ATA operation mode depending on the operating system (OS) that you installed. When you set this item to Enhanced Mode, Serial ATA and Parallel ATA devices are auto-detected and placed in native IDE mode. Set to Enhanced Mode if you are using native OS, such as Windows® 2000/XP. When you set this item to Compatible Mode, Serial ATA and Parallel ATA devices are auto-detected and placed in legacy mode. Set this item to [Compatible] if you are using legacy OS, e.g. Windows ME/98/NT, MS-DOS. Configuration options: [Compatible] [Enhanced]

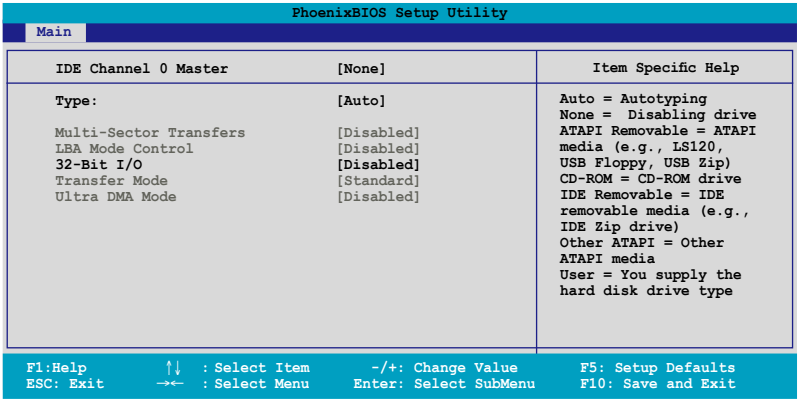
The following items appear only if you set the SATA Controller Mode Option item to [Enhanced].

SATA RAID Enable [Disabled]
Allows you to enable or disable the Serial ATA RAID function.
Configuration options: [Disabled] [Enabled]

SATA AHCI Enable [Disabled]
Allows you to enable or disable the Serial ATA AHCI function.
Configuration options: [Disabled] [Enabled]

- AHCI mode item will support only under Windows environment.
- Due to the driver limitation, you will not find any SATA driver if you install Fedora core 4.

4.3.5 IDE Channel 0 Master/Slave


PhoenixBIOS Setup Utility
Main
IDE Channel 0 Master [None]
Item Specific Help
Type: [Auto]
Multi-Sector Transfers [Disabled]
LBA Mode Control [Disabled]
32-Bit I/O [Disabled]
Transfer Mode [Standard]
Ultra DMA Mode [Disabled]
Auto = Autotyping
None = Disabling drive
ATAPI Removable = ATAPI media (e.g., LS120, USB Floppy, USB Zip)
CD-ROM = CD-ROM drive
IDE Removable = IDE removable media (e.g., IDE Zip drive)
Other ATAPI = Other ATAPI media
User = You supply the hard disk drive type
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select [CD-ROM] if you are specifically configuring a CD-ROM drive. Select [ATAPI Removable] if your device is either a ZIP, or LS-120 drive. Select [User] to manually enter the parameters of the device.
Configuration options: [Auto] [User] [Other ATAPI] [IDE Removable] [CD-ROM] [ATAPI Removable] [None]

- Except for 32-Bit I/O item, the following items become user-configurable when the Type item is not set to [Auto].
- Suggest you to keep the default setting of this item [Auto].
- For items that have no sub-menu, you have to use -/+ to change the values.

Multi-Sector Transfers [Disabled]

Enables or disables data multi-sectors transfers. When set to 2~16 Sectors, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors]

LBA Mode Control [Disabled]

Enables or disables the LBA mode. Setting to Enabled enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Enabled]

32-Bit I/O [Disabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

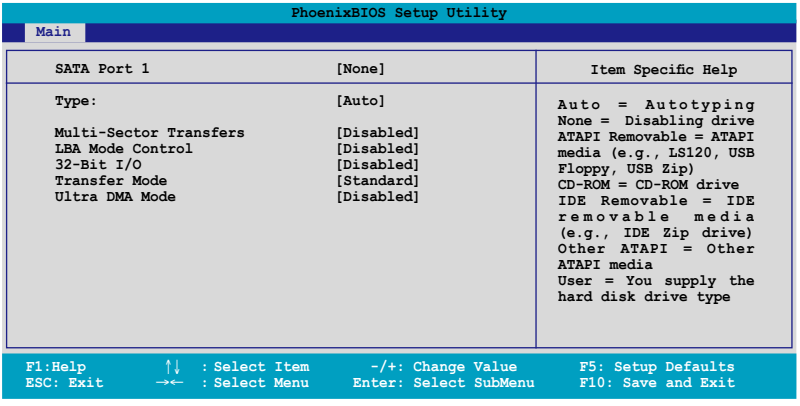
Transfer Mode [Stadard]

Allows you to select the mothod for the data transferring if the hard disk supports this feature. Configuration options: [Standard] [Fast PIO 1] [Fast PIO 2] [Fast PIO 3] [Fast PIO 4] [FPIO 3 / DMA 1] [FPIO 4 / DMA2]

Ultra DMA Mode [Disabled]

When this item is set to [Mode 0-5], the UDMA capability allows improved transfer speeds and data integrity for supported IDE devices. Configuration options: [Disabled] [Mode 0] [Mode 1] [Mode 2] [Mode 3] [Mode 4] [Mode 5]

4.3.6 SATA Port 1/2/3/4



Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select [CD-ROM] if you are specifically configuring a CD-ROM drive. Select [ATAPI Removable] if your device is either a ZIP, LS-120, or MO drive. Select [User] to manually enter the parameters of the device. Configuration options: [Auto] [User] [Other ATAPI] [IDE Removable] [CD-ROM] [ATAPI Removable]

- Except for 32-Bit I/O item, the following items become user-configurable when the Type item is not set to [Auto].
- For items that have no sub-menu, you have to use -/+ to change the values.

Multi-Sector Transfers [Disabled]
Enables or disables data multi-sectors transfers. When set to 2~16 Sectors, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors]

LBA Mode Control [Disabled]
Enables or disables the LBA mode. Setting to Enabled enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Enabled]

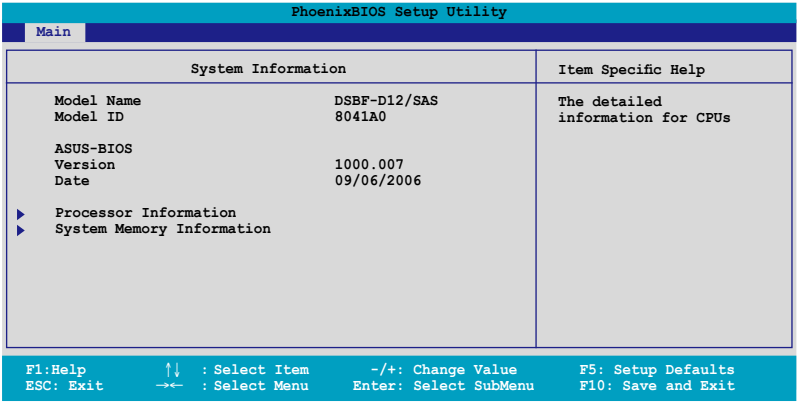
32-Bit I/O [Disabled]
Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

Transfer Mode [Stadard]
Allows you to select the mothod for the data transferring if the hard disk supports this feature. Configuration options: [Standard] [Fast PIO 1] [Fast PIO 2] [Fast PIO 3] [Fast PIO 4] [FPIO 3 / DMA 1] [FPIO 4 / DMA2]

Ultra DMA Mode [Disabled]
When this item is set to [Mode 0-5], the UDMA capability allows improved transfer speeds and data integrity for supported IDE devices. Configuration options: [Disabled] [Mode 0] [Mode 1] [Mode 2] [Mode 3] [Mode 4] [Mode 5]

4.3.7 System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.



The items in this menu are non-user configurable.

Model Name/Model ID

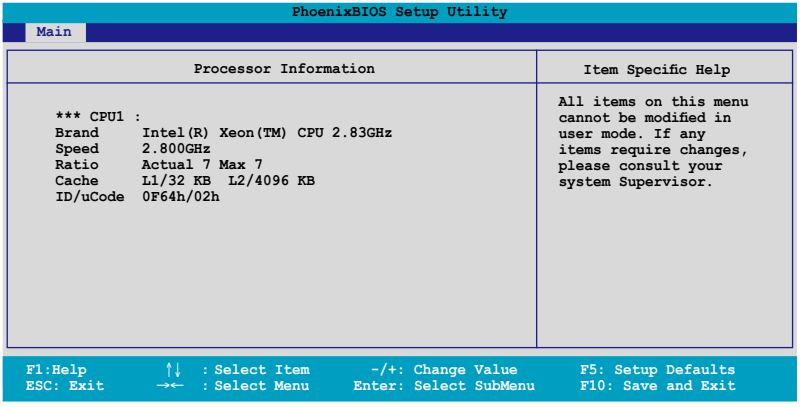
Displays the ASUS internal model information.

ASUS BIOS

Displays the BIOS revision and build date.

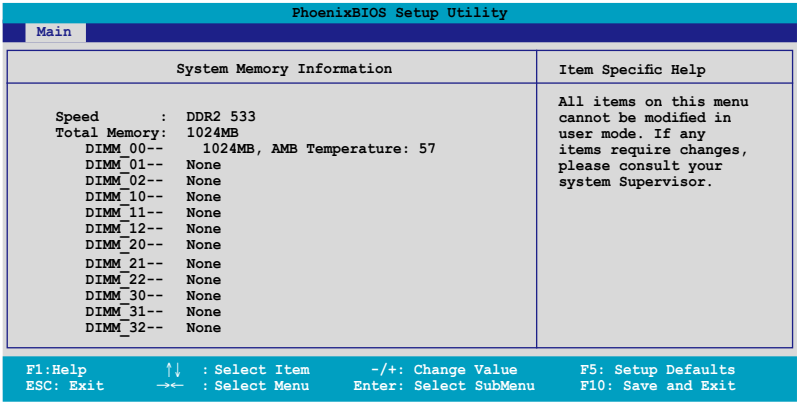
Processor Information

Displays the auto-detected CPU specification.


PhoenixBIOS Setup Utility
Main
Processor Information
Item Specific Help
*** CPU1 :
Brand Intel(R) Xeon(TM) CPU 2.83GHz
Speed 2.800GHz
Ratio Actual 7 Max 7
Cache L1/32 KB L2/4096 KB
ID/uCode 0F64h/02h
All items on this menu cannot be modified in user mode. If any items require changes, please consult your system Supervisor.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

System Memory Information

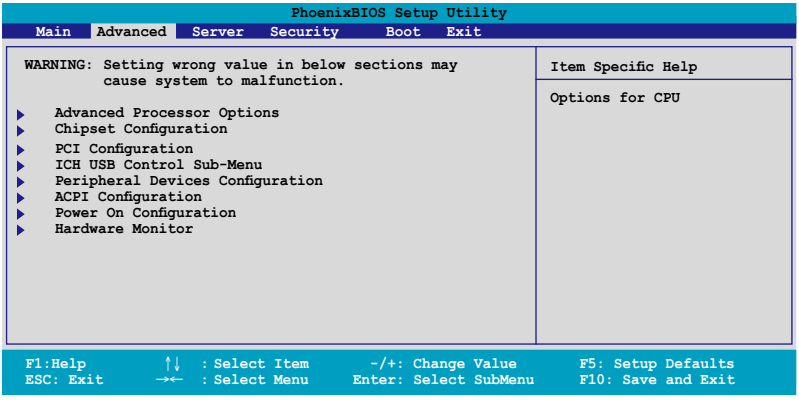
Displays the auto-detected system memory information.


PhoenixBIOS Setup Utility
Main
System Memory Information
Item Specific Help
Speed : DDR2 533
Total Memory: 1024MB
DIMM_00-- 1024MB, AMB Temperature: 57
DIMM_01-- None
DIMM_02-- None
DIMM_10-- None
DIMM_11-- None
DIMM_12-- None
DIMM_20-- None
DIMM_21-- None
DIMM_22-- None
DIMM_30-- None
DIMM_31-- None
DIMM_32-- None
All items on this menu cannot be modified in user mode. If any items require changes, please consult your system Supervisor.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

4.4 Advanced menu

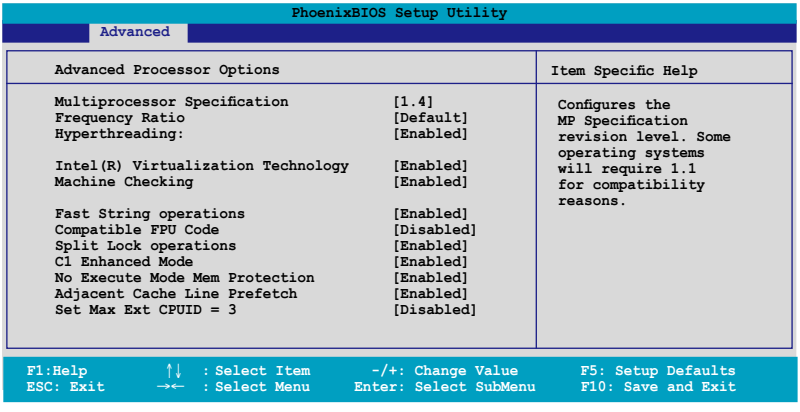
The Advanced menu items allow you to change the settings for the CPU and other system devices.

Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.


PhoenixBIOS Setup Utility
Main Advanced Server Security Boot Exit
WARNING: Setting wrong value in below sections may cause system to malfunction.
Advanced Processor Options
Chipset Configuration
PCI Configuration
ICH USB Control Sub-Menu
Peripheral Devices Configuration
ACPI Configuration
Power On Configuration
Hardware Monitor
Item Specific Help
Options for CPU
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

4.4.1 Advanced Processor Options

The following screen appears when you install an Intel® 5000 series CPU.


PhoenixBIOS Setup Utility
Advanced
Advanced Processor Options
Multiprocessor Specification [1.4]
Frequency Ratio [Default]
Hyperthreading: [Enabled]
Intel(R) Virtualization Technology [Enabled]
Machine Checking [Enabled]
Fast String operations [Enabled]
Compatible FPU Code [Disabled]
Split Lock operations [Enabled]
C1 Enhanced Mode [Enabled]
No Execute Mode Mem Protection [Enabled]
Adjacent Cache Line Prefetch [Enabled]
Set Max Ext CPUID = 3 [Disabled]
Item Specific Help
Configures the MP Specification revision level. Some operating systems will require 1.1 for compatibility reasons.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Multiprocessor Specification [1.4]

Allows you to configure the MP Specification revision level.
Configuration options: [1.1] [1.4]

Frequency Ratio [Default]

Allows you to select the processor frequency ratio.
Configuration options: [Default] [X 12]

Hyperthreading [Enabled]

Allows you to enable or disable the Intel® Hyper-Threading Technology feature.
Configuration options: [Disabled] [Enabled]

Intel(R) Virtualization Technology [Enabled]

Configuration options: [Disabled] [Enabled]

*Machine Checking [Enabled]

Configuration options: [Disabled] [Enabled]

*Fast String Operations [Enabled]

Configuration options: [Disabled] [Enabled]

*Compatible FPU Code [Disabled]

Configuration options: [Disabled] [Enabled]

*Split Lock operations [Enabled]

Configuration options: [Disabled] [Enabled]

C1 Enhanced Mode [Enabled]

Allows you to enable or disable C1E mode. In C1E mode, the CPU power consumption is lower when idle. Configuration options: [Disabled] [Enabled]

No Execute Mode Mem Protection [Enabled]

Configuration options: [Disabled] [Enabled]

Set Max Ext CPUID = 3 [Disabled]

Enable this item to boot legacy operating systems that cannot support CPUs with extended CPUID functions. Configuration options: [Disabled] [Enabled]

Adjacent Cache Line Prefetch [Enabled]

Configuration options: [Disabled] [Enabled]

Items with * mark are for technical personnel to debug only.

Echo TPR [Disabled]

Configuration options: [Disabled] [Enabled]

Scroll down to display the following items, which appear in both Intel® 5000, 5100, and 5300 series CPU.

Advanced Processor Options		Item Specific Help
Discrete MTRR Allocation	[Disabled]	
Intel EIST support:	[Disabled]	

F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Discrete MTRR Allocation [Disabled]

Configuration options: [Disabled] [Enabled]

Intel EIST support [Disabled]

Enables or disables EIST support. When enabled, this item allows the CPU P state to dynamically change based on system loading.
Configuration options: [Disabled] [Enabled]

The following screen appears when you install an Intel® 5100 and 5300 series CPU. Refer to page 21 for the description of items that are in common with Intel® 5000 series CPU screen.

PhoenixBIOS Setup Utility

Advanced

Advanced Processor Options		Item Specific Help
Multiprocessor Specification	[1.4]	Configures the MP Specification revision level. Some operating systems will require 1.1 for compatibility reasons.
Numbers of Stop Grant	[Per Core]	
Intel(R) Virtualization Technology	[Enabled]	
Machine Checking	[Enabled]	
Fast String Operations	[Enabled]	
Compatible FPU Code	[Disabled]	
Split Lock operations	[Enabled]	
Thermal Management 2	[Enabled]	
C1 Enhanced Mode	[Enabled]	
No Execute Mode Mem Protection	[Enabled]	
Adjacent Cache Line Prefetch	[Enabled]	
Set Max Ext CPUID = 3	[Disabled]	
Echo TPR	[Disabled]	

F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Numbers of Stop Grant [Per Core]

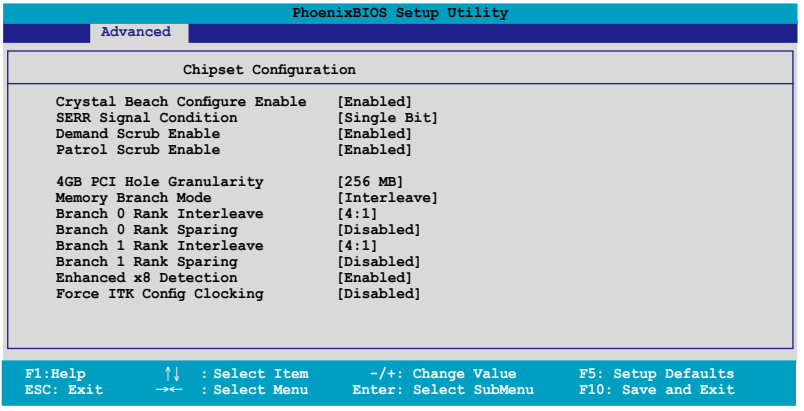
Configuration options: [Per Core] [Single]

Thermal Management 2 [Enabled]

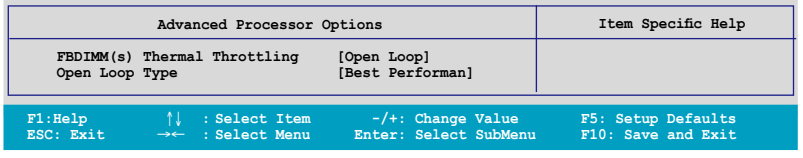
Configuration options: [Disabled] [Enabled]

4.4.2 Chipset Configuration

This menu shows the chipset configuration settings. Select an item then press <Enter> to display a pop-up menu with the configuration options.


PhoenixBIOS Setup Utility
Advanced
Chipset Configuration
Crystal Beach Configure Enable [Enabled]
SERR Signal Condition [Single Bit]
Demand Scrub Enable [Enabled]
Patrol Scrub Enable [Enabled]
4GB PCI Hole Granularity [256 MB]
Memory Branch Mode [Interleave]
Branch 0 Rank Interleave [4:1]
Branch 0 Rank Sparing [Disabled]
Branch 1 Rank Interleave [4:1]
Branch 1 Rank Sparing [Disabled]
Enhanced x8 Detection [Enabled]
Force ITK Config Clocking [Disabled]
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Scroll down to display the following items:


Advanced Processor Options
Item Specific Help
FBDIMM(s) Thermal Throttling [Open Loop]
Open Loop Type [Best Performan]
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Crystal Beach Configure Enable [Enabled]

Allows you to enable or disable the Configuration/Memory mapped accesses to the Crystal Beach Configuration space located in Device 8, Fn 0, and Fn 1. Configuration options: [Disabled] [Enabled]

SERR Signal Condition [Single Bit]

Allows you to select the ECC error that the SERR# asserts.
Configuration options: [None] [Single Bit] [Multiple Bit] [Both]

Demand Scrub Enable [Enabled]

Enables or disables the Demand Scrubbing.
Configuration options: [Disabled] [Enabled]

Patrol Scrub Enable [Enabled]

Enables or disables the Patrol Scrubbing.
Configuration options: [Disabled] [Enabled]

4GB PCI Hole Granularity [256 MB]

Allows you to select the granularity of the PCI hole for PCI resource.
Configuration options: [256 MB] [512 MB] [1.0 GB] [2.0 GB]

Memory Branch Mode [Interleave]

Allows you to select the memory branch mode.
Configuration options: [Sequential] [Interleave] [Mirror] [Single channel 0]

Branch 0 Rank Interleave [4:1]

Allows you to select the Branch 0 Rank Interleave.
Configuration options: [1:1] [2:1] [4:1]

Branch 0 Rank Sparing [Disabled]

Allows you to enable or disable the Branch 0 rank/DIMM Sparing feature.
Configuration options: [Disabled] [Enabled]

Branch 1 Rank Interleave [4:1]

Allows you to select the Branch 1 Rank Interleave.
Configuration options: [1:1] [2:1] [4:1]

Branch 1 Rank Sparing [Disabled]

Allows you to enable or disable the Branch 1 rank/DIMM Sparing feature.
Configuration options: [Disabled] [Enabled]

Enhanced x8 Detection [Enabled]

Allows you to enable or disable the enhanced x8 DRAM UC error detection.
Configuration options: [Disabled] [Enabled]

Force ITK Config Clocking [Disabled]

Allows you to enable or disable the FBD configuration for ITK test suite.
Configuration options: [Disabled] [Enabled]

FBDIMM(s) Thermal Throttling [Open Loop]

Allows you to disable or set the thermal throttling control.
Configuration options: [Open Loop] [Closed Loop] [ASUS MemCool Fan] [Disabled]

Set this item to [ASUS MemCool Fan] for a better fan management.

Open Loop Type [Best Performance]

Allows you to select the Open Loop Type.
Configuration options: [Best Performance] [Best Acoustic] [User Define]

The following items appear when you set the **Open Loop Type** to [User Define].

Environment Temperature [25 ºC]

Allows you to select the Environment Temperature value.
Configuration options: [20 ºC] ~ [40 ºC]

Temperature Rise [25 ºC]

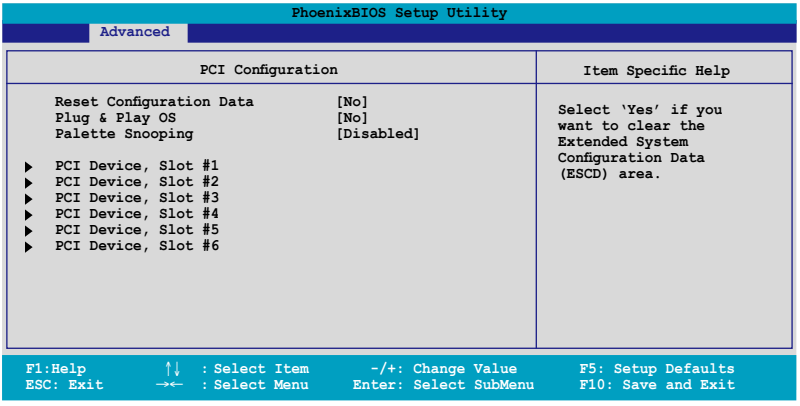
Allows you to select the Temperature Rise value.
Configuration options: [10 ºC] ~ [30 ºC]

FBDIMM(s) Air Flow [2.0]

Allows yout to select the Air Flow value.
Configuration options: [1.0] [1.5] ~ [5.0]

4.4.3 PCI Configuration

This menu shows the PCI configuration settings. Select an item then press <Enter> to display the configuration options.


PhoenixBIOS Setup Utility
Advanced
PCI Configuration
Item Specific Help
Reset Configuration Data [No]
Plug & Play OS [No]
Palette Snooping [Disabled]
PCI Device, Slot #1
PCI Device, Slot #2
PCI Device, Slot #3
PCI Device, Slot #4
PCI Device, Slot #5
PCI Device, Slot #6
Select 'Yes' if you want to clear the Extended System Configuration Data (ESCD) area.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Reset Configuration Data [No]

This item allows you to clear the Extended System Configuration Data (ESCD) area. Configuration options: [No] [Yes]

Plug & Play O/S [No]

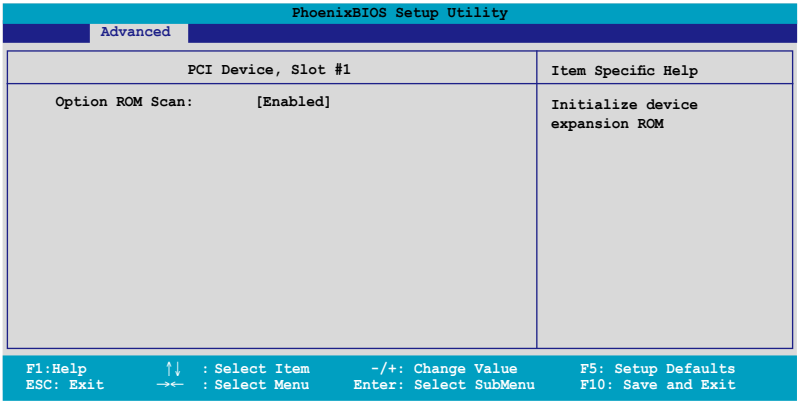
When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot.
Configuration options: [No] [Yes]

Palette Snooping [Disabled]

When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

PCI Device, Slot #1 ~ 6

Allows you to configure the specific PCI devices.

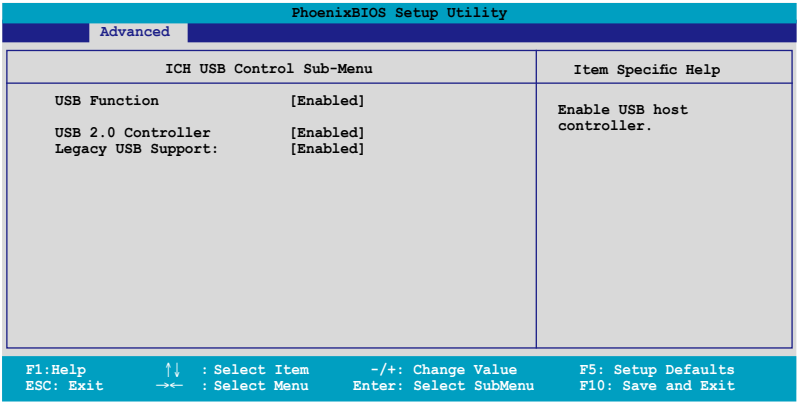

PhoenixBIOS Setup Utility
Advanced
PCI Device, Slot #1
Option ROM Scan: [Enabled]
Item Specific Help
Initialize device expansion ROM
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Option ROM Scan [Enabled]

Allows you to enable or disable the device expansion ROM.
Configuration options: [Enabled] [Disabled]

4.4.4 ICH USB Control Sub-Menu

The items in this menu allow you to display the USB configuration settings. Select an item then press <Enter> to display the configuration options.


PhoenixBIOS Setup Utility
Advanced
ICH USB Control Sub-Menu
Item Specific Help
USB Function [Enabled]
USB 2.0 Controller [Enabled]
Legacy USB Support: [Enabled]
Enable USB host controller.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

USB Function [Enabled]

Allows you to enable the USB host controller.
Configuration options: [Disabled] [Enabled]

The following items appear only if you enable the USB Function item.

USB 2.0 Controller [Enabled]

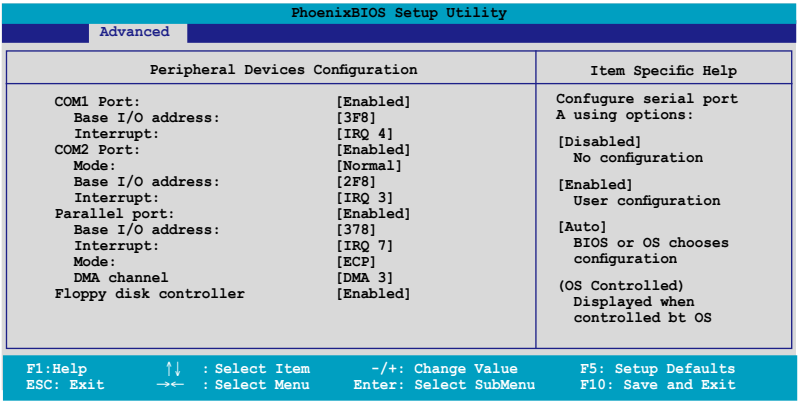
Allows you to enable or disable the USB 2.0 controller. Setting this item to [Enabled] allows the built-in high speed USB support in the BIOS to turn on automatically when you install high speed USB devices. Configuration options: [Disabled] [Enabled]

Legacy USB Support [Enabled]

Allows you to enable or disable support for USB devices on legacy operating systems (OS). Setting to [Enabled] allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. if no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled]

4.4.5 Peripheral Devices Configuration

This menu shows the peripheral devices configuration settings. Select an item then press <Enter> to display the configuration options.


PhoenixBIOS Setup Utility
Advanced
Peripheral Devices Configuration
COM1 Port: [Enabled]
Base I/O address: [3F8]
Interrupt: [IRQ 4]
COM2 Port: [Enabled]
Mode: [Normal]
Base I/O address: [2F8]
Interrupt: [IRQ 3]
Parallel port: [Enabled]
Base I/O address: [378]
Interrupt: [IRQ 7]
Mode: [ECP]
DMA channel [DMA 3]
Floppy disk controller [Enabled]
Item Specific Help
Confugure serial port A using options:
[Disabled] No configuration
[Enabled] User configuration
[Auto] BIOS or OS chooses configuration
(OS Controlled) Displayed when controlled bt OS
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

COM1 Port [Enabled]

Allows you to configure COM1 port.
Configuration options: [Disabled] [Enabled] [Auto]

Base I/O address [3F8]

Allows you to select the base I/O address for COM1 port.
Configuration options: [3F8] [2F8] [3E8] [2E8]

Interrupt [IRQ 4]

Allows you to set the interrupt for COM1 port
Configuration options: [IRQ 3] [IRQ 4]

COM2 Port [Enabled]

Allows you to configure COM2 port.
Configuration options: [Disabled] [Enabled] [Auto]

Mode [Normal]

Allows you to set the mode for COM2 port.
Configuration options: [Normal] [IR] [ASK-IR]

Base I/O address [2F8]

Allows you to select the base I/O address for COM2 port.
Configuration options: [3F8] [2F8] [3E8] [2E8]

Interrupt [IRQ 3]

Allows you to set the interrupt for COM2 port.
Configuration options: [IRQ 3] [IRQ 4]

Parallel port [Enabled]

Allows you to configure the parallel port.
Configuration options: [Disabled] [Enabled] [Auto]

Base I/O address [378]
Allows you to select the base I/O address for the parallel port.
Configuration options: [378] [278] [3BC]

Interrupt [IRQ 7]
Allows you to set the interrupt for the parallel port.
Configuration options: [IRQ 5] [IRQ 7]

Mode [ECP]
Allows you to set the mode for the parallel port.
Configuration options: [Output only] [Bi-directional] [EPP] [ECP]

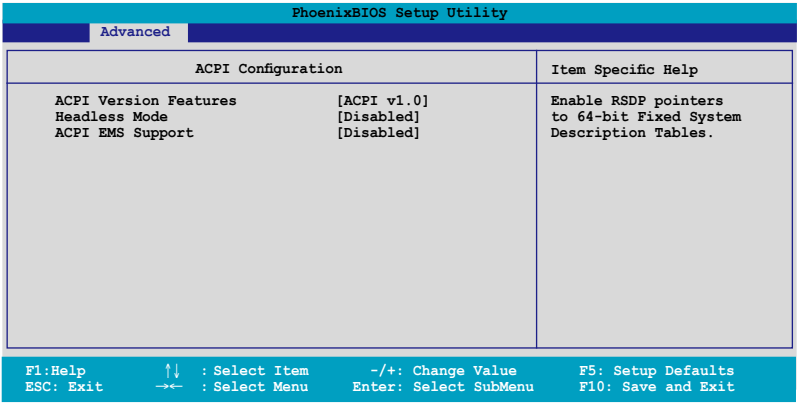
DMA channel [DMA 3]
Allows you to set the DMA channel for the parallel port.
Configuration options: [DMA 1] [DMA 3]

Floppy disk controller [Enabled]

Allows you to configure the floppy disk controller.
Configuration options: [Disabled] [Enabled] [Auto]

4.4.6 ACPI Configuration

This menu shows the Advanced Configuration and Power Interface (ACPI) configuration settings. Select an item then press <Enter> to display the configuration options.


PhoenixBIOS Setup Utility
Advanced
ACPI Configuration
Item Specific Help
ACPI Version Features [ACPI v1.0]
Headless Mode [Disabled]
ACPI EMS Support [Disabled]
Enable RSDP pointers to 64-bit Fixed System Description Tables.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

ACPI Version Features [ACPI v1.0]

Allows you to enable RSDP pointers to 64-bit fixed system description tables.
Configuration options: [ACPI v1.0] [ACPI v2.0] [ACPI v3.0]

Headless Mode [Disabled]

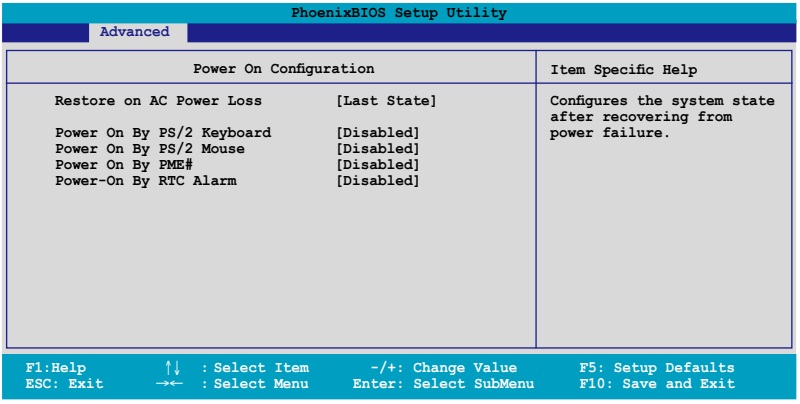
Allows you to enable or disable the headless operation mode through ACPI.
Configuration options: [Disabled] [Enabled]

ACPI EMS Support [Disabled]

Allows you to enable or disable the ACPI EMS support.
Configuration options: [Disabled] [Enabled]

4.4.7 Power On Configuration

This menu shows the power configuration settings. Select an item then press <Enter> to display the configuration options.


PhoenixBIOS Setup Utility
Advanced
Power On Configuration
Item Specific Help
Restore on AC Power Loss [Last State]
Configures the system state after recovering from power failure.
Power On By PS/2 Keyboard [Disabled]
Power On By PS/2 Mouse [Disabled]
Power On By PME# [Disabled]
Power-On By RTC Alarm [Disabled]
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Restore on AC Power Loss [Last State]

When set to [Power Off], the system goes into “off state” after an AC power interruption. When set to [Power On], the system turns on automatically after a power interruption. When set to [Last State], the system goes into whatever was the system state (on or off) before the power interruption.
Configuration options: [Power Off] [Power On] [Last State]

Power Up By PS/2 Keyboard [Disabled]

Allows you to use specific keys on the PS/2 keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.
Configuration options: [Enabled] [Disabled]

Power Up By PS/2 Mouse [Disabled]

When set to [Enabled], this parameter allows you to use the PS/2 mouse to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Enabled] [Disabled]

Power On By PME# [Disabled]

Allows you to enable or disable the PME and onboard LAN to generate a wake-up event. Configuration options: [Disabled] [Enabled]

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake-up event.
Configuration options: [Disabled] [Enabled]

The following items appear only if you enable the Power On By RTC Alarm item.

RTC Alarm Date [0]

To set the date of alarm, highlight this item and press <Enter> to display a date chart. Press <+> or <-> to change scroll through the options, then press <Enter> when done. The default setting [0] is equivalent to everyday alarm.
Configuration options: [0] [1] ~ [31]

RTC Alarm Date [00 : 00 : 00]

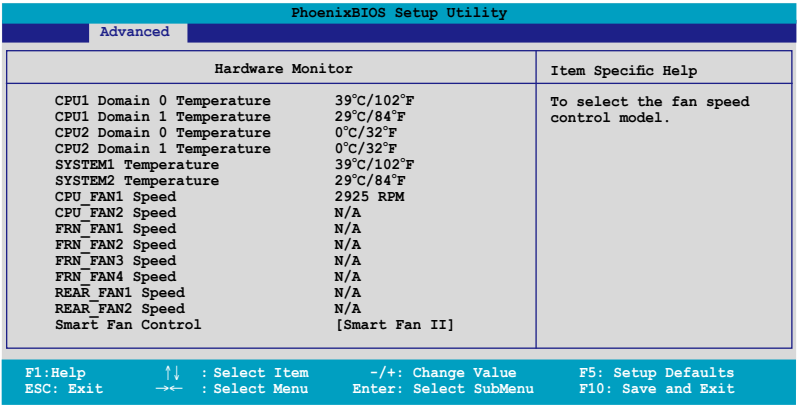
To set the time of alarm:

1. Press <+> or <-> to set the desired value.
2. Press <Tab> to move to the next field.
3. Press <Enter> when done.

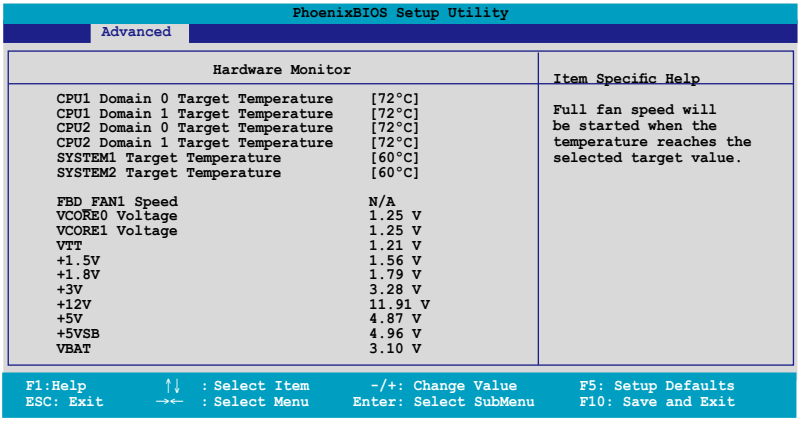
4.4.8 Hardware Monitor

This menu shows the hardware monitor configuration settings. Select an item then press <Enter> to display the configuration options.

The following screens appear when you install Intel® 5000 series CPU.


PhoenixBIOS Setup Utility
Advanced
Hardware Monitor
CPU1 Domain 0 Temperature 39°C/102°F
CPU1 Domain 1 Temperature 29°C/84°F
CPU2 Domain 0 Temperature 0°C/32°F
CPU2 Domain 1 Temperature 0°C/32°F
SYSTEM1 Temperature 39°C/102°F
SYSTEM2 Temperature 29°C/84°F
CPU_FAN1 Speed 2925 RPM
CPU_FAN2 Speed N/A
FRN_FAN1 Speed N/A
FRN_FAN2 Speed N/A
FRN_FAN3 Speed N/A
FRN_FAN4 Speed N/A
REAR_FAN1 Speed N/A
REAR_FAN2 Speed N/A
Smart Fan Control [Smart Fan II]
Item Specific Help
To select the fan speed control model.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Scroll down to display more items:


PhoenixBIOS Setup Utility
Advanced
Hardware Monitor
CPU1 Domain 0 Target Temperature [72°C]
CPU1 Domain 1 Target Temperature [72°C]
CPU2 Domain 0 Target Temperature [72°C]
CPU2 Domain 1 Target Temperature [72°C]
SYSTEM1 Target Temperature [60°C]
SYSTEM2 Target Temperature [60°C]
FBD_FAN1 Speed N/A
VCORE0 Voltage 1.25 V
VCORE1 Voltage 1.25 V
VTT 1.21 V
+1.5V 1.56 V
+1.8V 1.79 V
+3V 3.28 V
+12V 11.91 V
+5V 4.87 V
+5VSB 4.96 V
VBAT 3.10 V
Item Specific Help
Full fan speed will be started when the temperature reaches the selected target value.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

CPU1/2 Domain 0/1 Temperature, SYSTEM1/2 Temperature, CPU_FAN1/2 Speed, FRN_FAN1/2/3/4 Speed, REAR_FAN1/2 Speed

These fields show the auto-detected values and are not user-configurable. If no fan is installed, the field shows 0 RPM.

Smart Fan Control [Smart Fan II]

Allows you to disable or configure the Smart Fan feature.
Configuration options: [Disabled] [Smart Fan] [Smart Fan II]

CPU1/2 Domain 0/1 Target Temperature (CPU1/2 Target Temperature)

Allows you to set the target CPU temperature at which the CPU fan will run at full speed. Configuration options: [44ºC] ~ [66ºC]

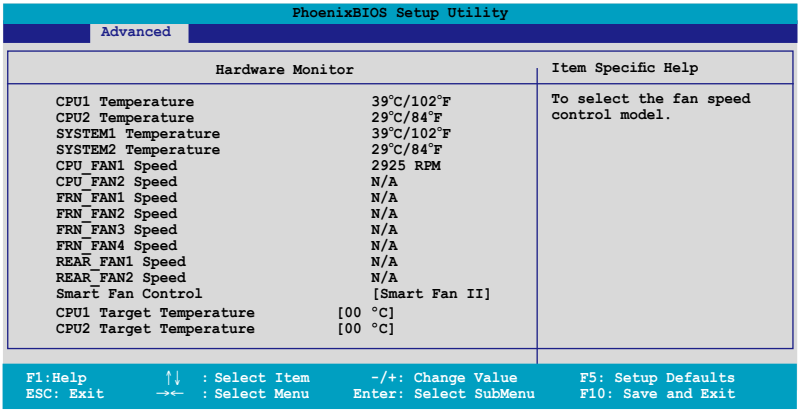
SYSTEM1/2 Target Temperature

Allows you to set the target sytem temperature at which the system fan will start running if the fan is not yet turned on.
Configuration options: [39ºC] ~ [60ºC]

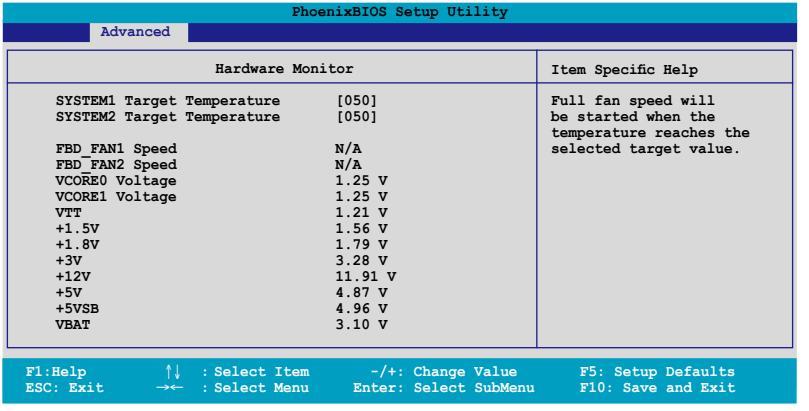
FBD_FAN1/2 Speed, VCORE0/1 Voltage, VTT, +1.5V, +1.8V, +3V, +12V, +5V, +5VSB, VBAT

These fields show the auto-detected values and are not user-configurable.

The following screens appear when you install Intel® 5100 and 5300 series CPU.


PhoenixBIOS Setup Utility
Advanced
Hardware Monitor
Item Specific Help
CPU1 Temperature 39°C/102°F
CPU2 Temperature 29°C/84°F
SYSTEM1 Temperature 39°C/102°F
SYSTEM2 Temperature 29°C/84°F
CPU_FAN1 Speed 2925 RPM
CPU_FAN2 Speed N/A
FRN_FAN1 Speed N/A
FRN_FAN2 Speed N/A
FRN_FAN3 Speed N/A
FRN_FAN4 Speed N/A
REAR_FAN1 Speed N/A
REAR_FAN2 Speed N/A
Smart Fan Control [Smart Fan II]
CPU1 Target Temperature [00 °C]
CPU2 Target Temperature [00 °C]
To select the fan speed control model.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Scroll down to display more items:


PhoenixBIOS Setup Utility
Advanced
Hardware Monitor
Item Specific Help
SYSTEM1 Target Temperature [050]
SYSTEM2 Target Temperature [050]
FBD_FAN1 Speed N/A
FBD_FAN2 Speed N/A
VCORE0 Voltage 1.25 V
VCORE1 Voltage 1.25 V
VTT 1.21 V
+1.5V 1.56 V
+1.8V 1.79 V
+3V 3.28 V
+12V 11.91 V
+5V 4.87 V
+5VSB 4.96 V
VBAT 3.10 V
Full fan speed will be started when the temperature reaches the selected target value.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

CPU1/2 Temperature, SYSTEM1/2 Temperature, CPU_FAN1/2 Speed, FRN_FAN1/2/3/4 Speed, REAR_FAN1/2 Speed

These fields show the auto-detected values and are not user-configurable. If no fan is installed, the field shows 0 RPM.

Smart Fan Control [Smart Fan II]

Allows you to disable or configure the Smart Fan feature.
Configuration options: [Disabled] [Smart Fan] [Smart Fan II]

CPU1/2 Target Temperature

Allows you to set the target CPU temperature at which the CPU fan will run at full speed. Configuration options: [44ºC] ~ [66ºC]

SYSTEM1/2 Target Temperature

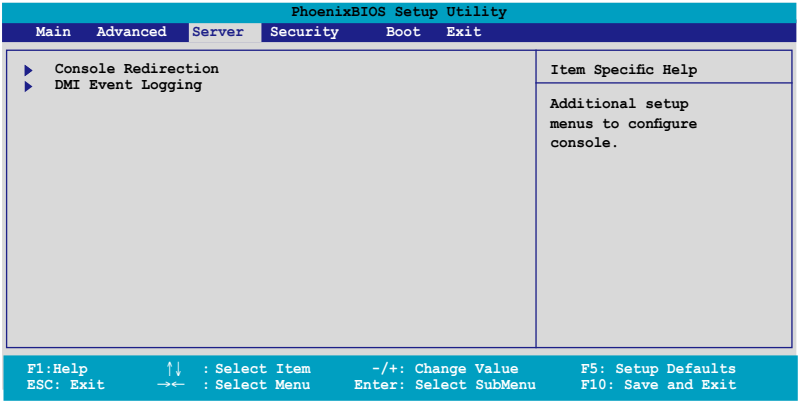
Allows you to set the target sytem temperature at which the system fan will start running if the fan is not yet turned on.
Configuration options: [39ºC] ~ [60ºC]

FBD_FAN1/2 Speed, VCORE0/1 Voltage, VTT, +1.5V, +1.8V, +3V, +12V, +5V, +5VSB, VBAT

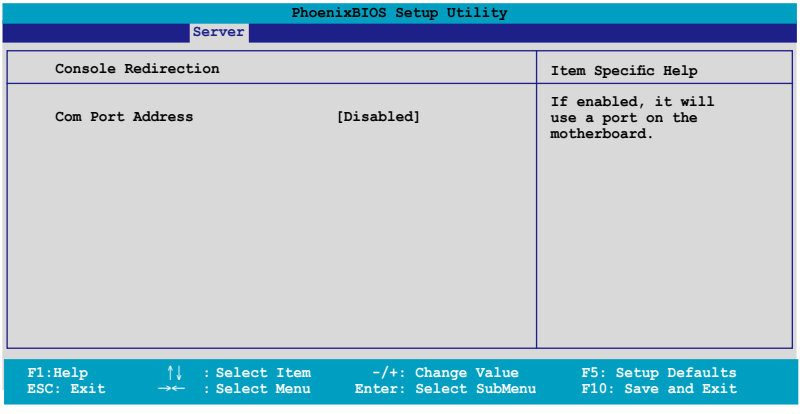
These fields show the auto-detected values and are not user-configurable.

4.5 Server menu

This Server menu items allow you to customize the server features.


PhoenixBIOS Setup Utility
Main Advanced Server Security Boot Exit
Console Redirection
DMI Event Logging
Item Specific Help
Additional setup menus to configure console.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

5.5.1 Console Redirection


PhoenixBIOS Setup Utility
Server
Console Redirection
Item Specific Help
Com Port Address [Disabled]
If enabled, it will use a port on the motherboard.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Com Port Address [Disabled]

Allows you to disable or select the COM port to use.
Configuration options: [Disabled] [Onboard COM1 port] [Onboard COM2 port]

The following items appear only if you set the Com Port Address item to [Onboard COM1 port] or [Onboard COM2 port].

Baud Rate [115.2K]

Allows you to enable the specified baud rate.
Configuration options: [300] [1200] [2400] [9600] [19.2K] [38.4K] [57.6K] [115.2K]

Console Type [PC-ANSI, 7bit]

Allows you to enable the specified console type.
Configuration options: [VT100] [VT100, 8bit] [PC-ANSI, 7bit] [PC ANSI] [VT100+] [VT-UTF8] [ASCII]

Flow Control [CTS/RTS]

Allows you to select the flow control for console redirection.
Configuration options: [None] [XON/XOFF] [CTS/RTS]

Console connection [Direct]

Allows you to select the console connection. [Direct] indicates that the console is connected directed to the system. [Via modem] indicates that a modem is used to connect. Configuration options: [Direct] [Via modem]

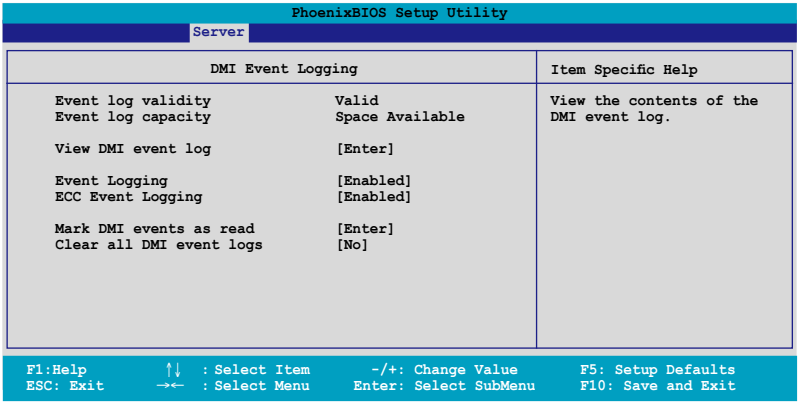
Continue C.R. after POST [Off]

Set this item to [On] if you want console redirection to continue after the operating system has loaded. Configuration options: [Off] [On]

of video pages to support [1]

Allows you to set the number of video pages to allocate for console redirection when the video hardware is not available. Press <-> or <+> to set the value, or enter the value using the numeric keypad. Configuration options: [1] ~ [8]

4.5.2 DMI Event Logging



Event log validity, Event log capacity

Displays the auto-detected system information.

View DMI event log [Enter]

Press <Enter> to view the contents of the DMI event log.

Event Logging [Enabled]

Enables or disables to allows logging of DMI events.
Configuration options: [Disabled] [Enabled]

ECC Event Logging [Enabled]

Enables or disables to allows logging of ECC events.
Configuration options: [Disabled] [Enabled]

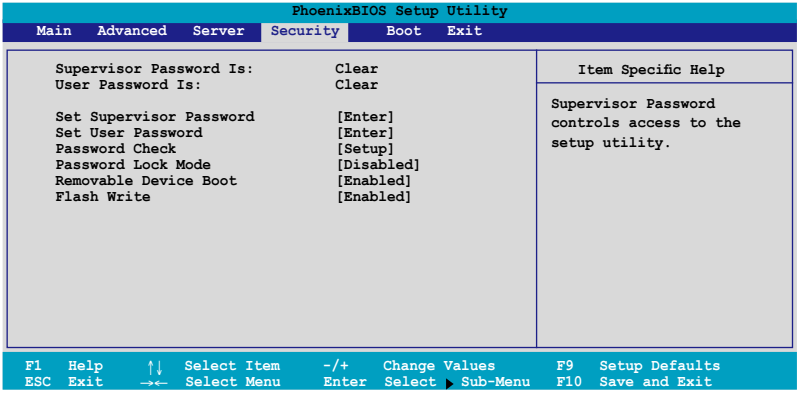
Mark DMI events as read [Enter]

Press <Enter> to mark all DMI events in the event log as read.

Clear all DMI event logs [No]

Allows you to keep or clear the DMI event log after rebooting.
Configuration options: [No] [Yes]

4.6 Security menu


PhoenixBIOS Setup Utility
Main Advanced Server Security Boot Exit
Supervisor Password Is: Clear
User Password Is: Clear
Set Supervisor Password [Enter]
Set User Password [Enter]
Password Check [Setup]
Password Lock Mode [Disabled]
Removable Device Boot [Enabled]
Flash Write [Enabled]
Item Specific Help
Supervisor Password controls access to the setup utility.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
ESC Exit →← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Supervisor Password Is [Clear]
User Password Is [Clear]

These fields allow you to set passwords:

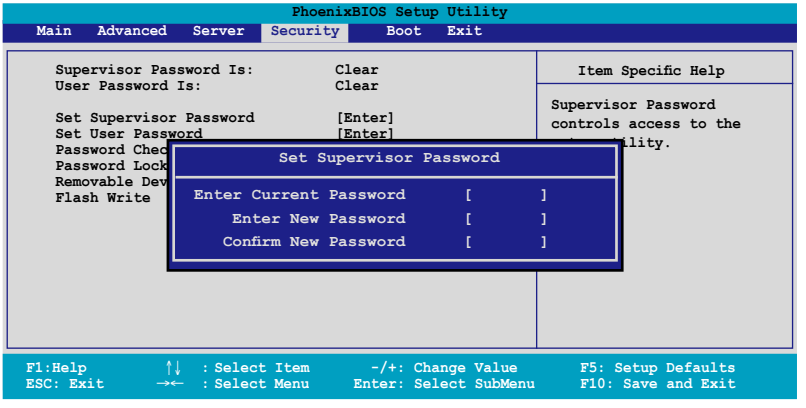
To set a password:

1. Select an item then press <Enter>.
2. Type in a password using a combination of a maximum of eight (8) alpha-numeric characters, then press <Enter>.
3. When prompted, confirm the password by typing the exact characters again, then press <Enter>. The password field setting is changed to Set.

To clear the password:

1. Select the item Set Supervisor Password or Set User Password, depending on which password you want to clear. Press <Enter>.

   The following message appears:


PhoenixBIOS Setup Utility
Main Advanced Server Security Boot Exit
Supervisor Password Is: Clear
User Password Is: Clear
Set Supervisor Password [Enter]
Set User Password [Enter]
Item Specific Help
Supervisor Password controls access to the
Set Supervisor Password
Enter Current Password [ ]
Enter New Password [ ]
Confirm New Password [ ]
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

2. In the Enter current password field, type in your current password. Press <Enter>.
3. The cursor moves to the next field, Enter new password. Press <Enter>. Do not type anything in this field.
4. The cursor moves to the next field, Confirm new password. Press <Enter>. Do not type anything in this field.
5. When the confirmation message “Password has been changed” appears, press <Enter>.

   The display returns to the Security menu. Note that the password field on top is changed to Clear.

A note about passwords

The Supervisor password is required to enter the BIOS Setup program preventing unauthorized access. The User password is required to boot the system preventing unauthorized use.

Forgot your password?

If you forget your password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. If you need to erase the CMOS RAM, refer to section “2.6 Jumpers” for instructions.

Password Check [Setup]

This field requires you to enter the password before entering the BIOS setup or the system. Select [Setup] to require the password before entering the BIOS Setup. Select [System] to require the password before entering the system. Configuration options: [Setup] [Always]

Password Lock Mode [Enabled]

When set to [Enabled], the keyboard is locked and the user has no privilege to launch the BIOS setup utility when installing adapter cards during option ROM initialization. Configuration options: [Disabled] [Enabled]

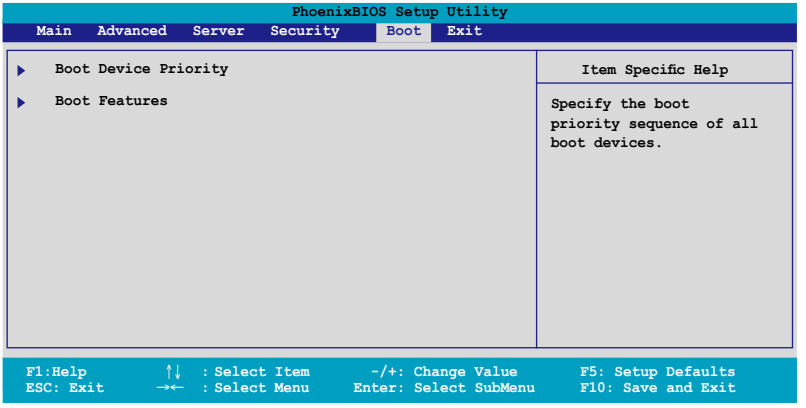
Removable Device Boot [Enabled]

Allows you to enable or disable booting from a legacy floppy, USB floppy, or IDE optical drive. Configuration options: [Disabled] [Enabled]

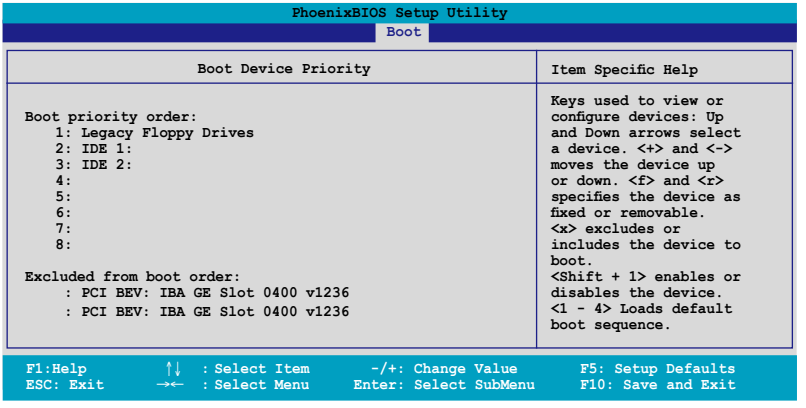
Flash Write [Enabled]

Set this item to [Disabled] to write-protect the BIOS flash memory. Configuration options: [Disabled] [Enabled]

4.7 Boot menu


PhoenixBIOS Setup Utility
Main Advanced Server Security Boot Exit
Boot Device Priority
Boot Features
Item Specific Help
Specify the boot priority sequence of all boot devices.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

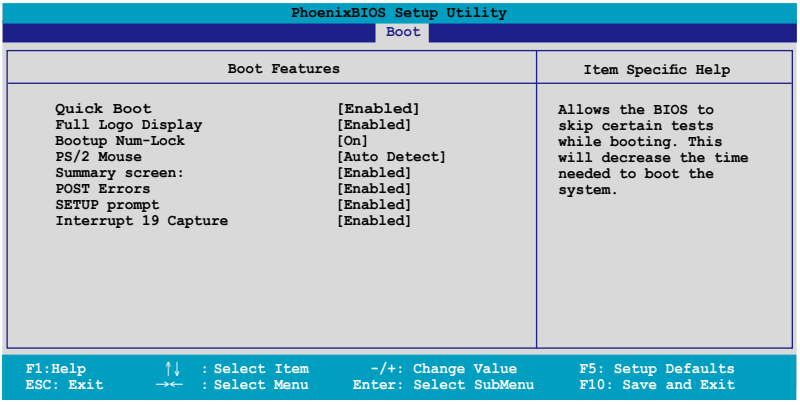
4.7.1 Boot Device Priority


PhoenixBIOS Setup Utility
Boot
Boot Device Priority
Boot priority order:
1: Legacy Floppy Drives
2: IDE 1:
3: IDE 2:
4:
5:
6:
7:
8:
Excluded from boot order:
: PCI BEV: IBA GE Slot 0400 v1236
: PCI BEV: IBA GE Slot 0400 v1236
Item Specific Help
Keys used to view or configure devices: Up and Down arrows select a device. <+> and <-> moves the device up or down. <f> and <r> specifies the device as fixed or removable. <x> excludes or includes the device to boot. <Shift + 1> enables or disables the device. <1 - 4> Loads default boot sequence.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Refer to the following table for keys assigned to configure devices.

Key/s	Use this key to...
<Up arrow> / <Down arrow>	select a device.
<+> / <->	move the device up or down.
<f> / <r>	specify the device as fixed or removable.
<x>	exclude or include the device to boot.
<Shift + 1>	enable or disable the device.
<1 - 4>	load default boot sequence.

4.7.2 Boot Features


PhoenixBIOS Setup Utility
Boot
Boot Features
Item Specific Help
Quick Boot [Enabled]
Full Logo Display [Enabled]
Bootup Num-Lock [On]
PS/2 Mouse [Auto Detect]
Summary screen: [Enabled]
POST Errors [Enabled]
SETUP prompt [Enabled]
Interrupt 19 Capture [Enabled]
Allows the BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

Full Logo Display [Enabled]

Allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Auto] [On] [Off]

PS/2 Mouse [Auto Detect]

Allows you to enable or disable support for PS/2 mouse.
Configuration options: [Disabled] [Enabled] [Auto Detect]

Summary screen: [Enabled]

When this item is enabled, the system configuration is displayed during POST.
Configuration options: [Disabled] [Enabled]

POST Errors [Enabled]

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

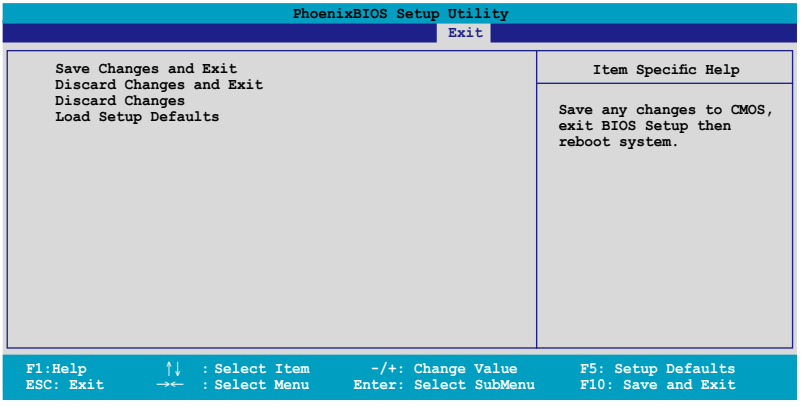
SETUP prompt [Enabled]

When this item is set to Enabled, the system displays the message “Press DEL to run Setup” during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Enabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

4.8 Exit menu


PhoenixBIOS Setup Utility
Exit
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Setup Defaults
Item Specific Help
Save any changes to CMOS, exit BIOS Setup then reboot system.
F1:Help ↑↓ : Select Item -/+: Change Value F5: Setup Defaults
ESC: Exit →← : Select Menu Enter: Select SubMenu F10: Save and Exit

Save Changes and Exit

Select this option then press <Enter>, or simply press <F10>, to save your changes to CMOS before exiting the Setup utility.

When a confirmation window appears:

- select [Yes], then press <Enter> to save and exit.
- select [No], then press <Enter>, or simply press <Esc>, to cancel the command and return to the Exit menu.

Discard Changes and Exit

Select this option then press <Enter> if you wish to exit the Setup utility without saving your changes.

When a confirmation window appears:

- select [Yes], then press <Enter> to discard your changes and exit.
- select [No], then press <Enter>, or simply press <Esc>, to cancel the command and return to the Exit menu.

Discard Changes

Select this option to discard the changes that you made, and restore the previously saved values.

When a confirmation window appears:

- select [Yes], then press <Enter> to discard any changes and load the previously saved values.
- select [No], then press <Enter>, or simply press <Esc>, to cancel the command and return to the Exit menu.

Load Setup Defaults

Select this option then press <Enter>, or simply press <F9>, to load the optimized values for each of the Setup menu items.

When a confirmation window appears:

- select [Yes], then press <Enter> to load the default values.
- select [No], then press <Enter>, or simply press <Esc>, to cancel the command and return to the Exit menu.

Chapter 5

This chapter provides instructions for setting up, creating, and configuring RAID sets using the available utilities.

RAID configuration

5.1 Setting up RAID

The motherboard comes with the following RAID solutions:

- LSI1068 PCI-X SAS controller supports SAS disk drives and RAID0, RAID1, and RAID1E configuration.

5.1.1 RAID definitions

RAID 0 *(Data striping)* optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 *(Data mirroring)* copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 1-E *(Enhanced RAID 1)* has a striped layout with each stripe unit having a secondary (or alternate) copy stored on a different disk. You can use three or more hard disk drives for this configuration.

RAID 0+1 is data striping and data mirroring combined without parity (redundancy data) having to be calculated and written. With the RAID 0+1 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

RAID 5 stripes both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

- If you want to boot the system from a hard disk drive included in a created RAID set, copy first the RAID driver from the support CD to a floppy disk before you install an operating system to the selected hard disk drive.
- If you need to create a RAID 5 set, you have to install an optional ZCR card. Contact ASUS retailers for more information.

5.1.2 Installing hard disk drives

The motherboard supports Serial ATA for RAID set configuration. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for RAID configuration:

1. Install the SATA hard disks into the drive bays following the instructions in the system user guide.
2. Connect a SATA signal cable to the signal connector at the back of each drive and to the SATA connector on the motherboard.
3. Connect a SATA power cable to the power connector on each drive.

5.1.3 Setting the RAID item in BIOS

You must set the RAID item in the BIOS Setup before you can create a RAID set from SATA hard disk drives attached to the SATA connectors supported by the Intel® 6321ESB Southbridge chip. To do this:

1. Enter the BIOS Setup during POST.
2. Go to the **Main Menu** > **IDE Configuration** > **S-ATA Configuration**, then press <Enter>.
3. Set the **SATA Controller Mode Option** item to [Enhanced], then press <Enter>.
4. Set the **SATA RAID Enable** item to [Enabled].
5. Save your changes, then exit the BIOS Setup.

Refer to Chapter 4 for details on entering and navigating through the BIOS Setup.

5.1.4 RAID configuration utilities

You may use the **LSI1068 SAS Configuration Utility** if you installed SAS hard disk drives to the mini-SAS connector(s) supported by the LSI1068 PCI-X SAS controller.

Refer to the succeeding sections for details on how to use each RAID configuration utility.

5.2 LSI Logic MPT Setup Utility

The LSI Logic MPT Setup Utility is an integrated RAID solution that allows you to allows you to create the following RAID set(s) from SAS hard disk drives supported by the LSI1068 PCI-X SAS controller:

- RAID 1 (Integrated Mirroring)
- RAID 1E (Integrated Mirroring Enhanced)
- RAID 0 (Integrated Striping)

5.2.1 Integrated Mirroring

Overview

The Integrated Mirroring (IM) feature supports simultaneous mirrored volumes with two disks (IM). Integrated Mirroring Enhanced (IME) supports three to eight disks, or seven mirrored disks plus a hot spare disk.

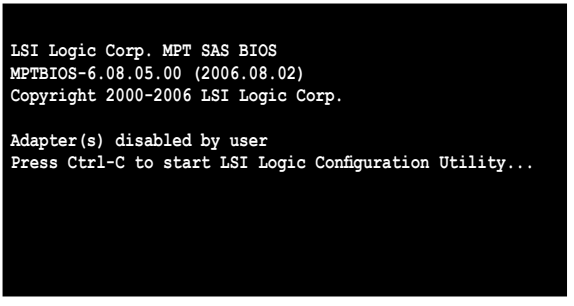
The IM feature supports hot swap capability, so when a disk in an IM volume failes, you can easily restore the volume, and the swapped disk is automatically re-mirrored.

Creating Integrated Mirroring volumes

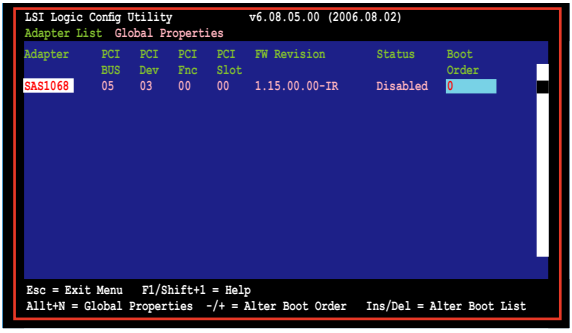
- You may use disks of different sized in IM and IME volumes; however, the size of the smallest disk determines the “logical” size of each member disk.
- Do not combine Serial ATA and SAS disks in one volume.
- The RAID BIOS setup screens shown in this section are for reference only and may not exactly match the items on your screen.

To create an IM volume:

1. Turn on the system after installing all SAS hard disk drives.
2. During POST, press <Ctrl+C> to enter the SAS configuration utility.

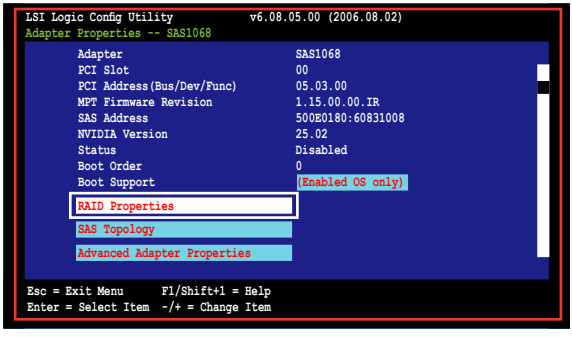

LSI Logic Corp. MPT SAS BIOS
MPTBIOS-6.08.05.00 (2006.08.02)
Copyright 2000-2006 LSI Logic Corp.
Adapter(s) disabled by user
Press Ctrl-C to start LSI Logic Configuration Utility...

3. The following screen appears. Select a channel and press <Enter> to enter the setup.

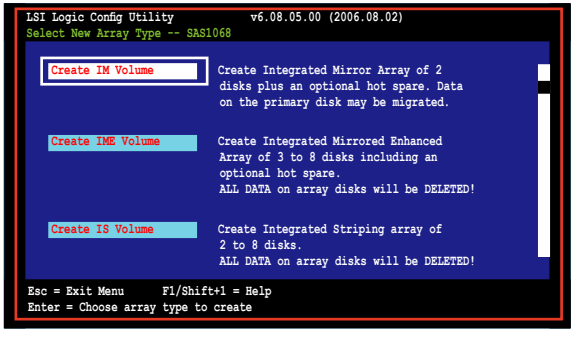

LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Adapter PCI BUS PCI Dev PCI Fnc PCI Slot FW Revision Status Boot Order
SAS1068 05 03 00 00 1.15.00.00-IR Disabled 0
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Global Properties -/+ = Alter Boot Order Ins/Del = Alter Boot List

The numbers of the channel depend on the controller.

4. The **Adapter Properties** screen appears.
Use the arrow keys to select **RAID Properties**, then press <Enter>.

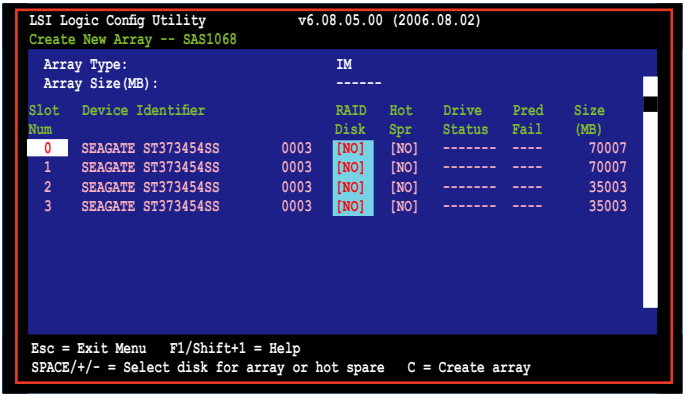


5. The **Select New Array Type** screen apprears.
Use the arrow keys to select **Create IM Volume**, then press <Enter>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Select New Array Type -- SAS1068
Create IM Volume
Create Integrated Mirror Array of 2 disks plus an optional hot spare. Data on the primary disk may be migrated.
Create IME Volume
Create Integrated Mirrored Enhanced Array of 3 to 8 disks including an optional hot spare.
ALL DATA on array disks will be DELETED!
Create IS Volume
Create Integrated Striping array of 2 to 8 disks.
ALL DATA on array disks will be DELETED!
Esc = Exit Menu F1/Shift+1 = Help
Enter = Choose array type to create

6. The Create New Array screen shows the disks you can add to make up the IM volume. Use the arrow key to select a disk, then move the cursor to the RAID Disk column. To include this disk in the array, press <+>, <->, or <Space>.

   You may also specify the Hot Spare disk here. Select the disk, then move the cursor to the Hot Spr column, then press <+>, <->, or <Space>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Create New Array -- SAS1068
Array Type: IM
Array Size(MB): ------
Slot Num | Device Identifier | RAID Disk | Hot Spr | Drive Status | Pred Fail | Size (MB)
0 SEAGATE ST373454SS 0003 [NO] [NO] ------- ---- 70007
1 SEAGATE ST373454SS 0003 [NO] [NO] ------- ---- 70007
2 SEAGATE ST373454SS 0003 [NO] [NO] ------- ---- 35003
3 SEAGATE ST373454SS 0003 [NO] [NO] ------- ---- 35003
Esc = Exit Menu F1/Shift+1 = Help
SPACE/+/- = Select disk for array or hot spare C = Create array

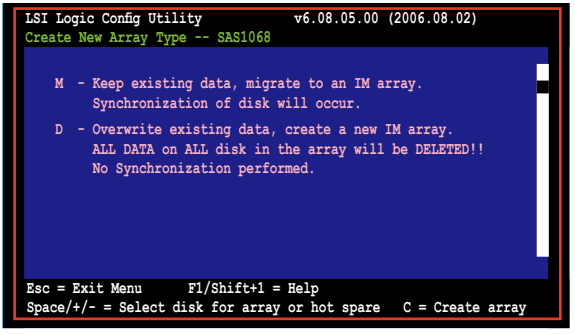
By default, the RAID Disk field shows No before array creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID array.
- The disk is not large enough to mirror existing data on the primary drive.
- The disk has been selected as the Hot Spare for the RAID array.
- The disk is already part of another array.

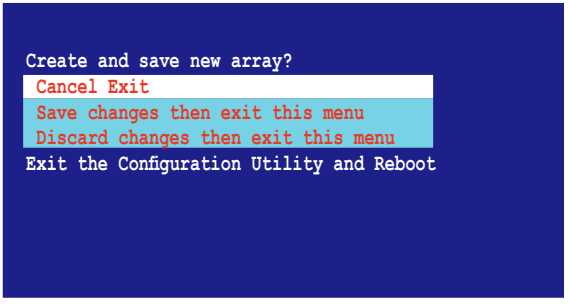
7. A confirmation screen appears.

   Press <M> to keep existing data on the first disk. If you choose this option, data on the first disk will be mirrored on the second disk that you will add to the volume later. Make sure the data you want to mirror is on the first disk.

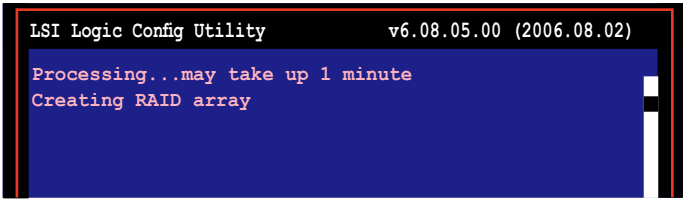
   Press <D> to overwrite any data and create the new IM array.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Create New Array Type -- SAS1068
M - Keep existing data, migrate to an IM array.
Synchronization of disk will occur.
D - Overwrite existing data, create a new IM array.
ALL DATA on ALL disk in the array will be DELETED!!
No Synchronization performed.
Esc = Exit Menu F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare C = Create array

8. Repeat steps 5 and 6 to add the second disk to the volume.
9. When done, press <C> to create the array, then select Save changes then exit this menu.


Create and save new array?
Cancel Exit
Save changes then exit this menu
Discard changes then exit this menu
Exit the Configuration Utility and Reboot

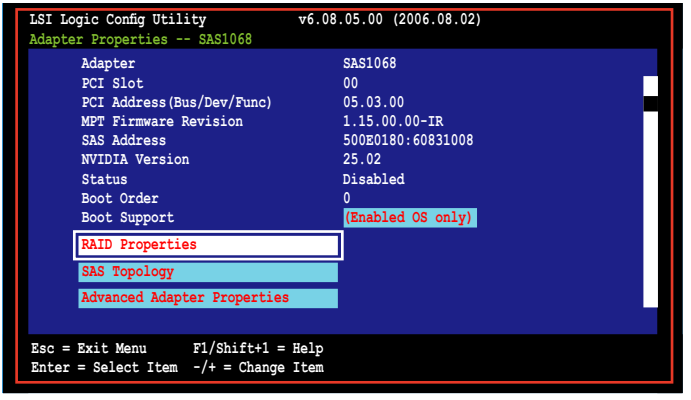
10. The utility creates the array.



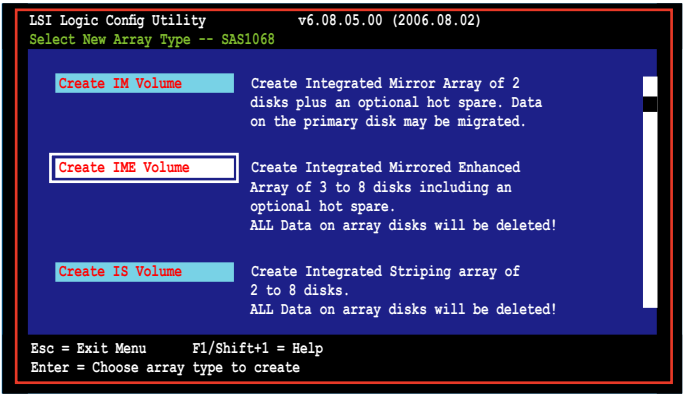
5.2.2 Integrated Mirroring Enhanced

To create an IME volume:

1. The **Adapter Properties** screen appears.
   Use the arrow keys to select **RAID Properties**, then press <Enter>.



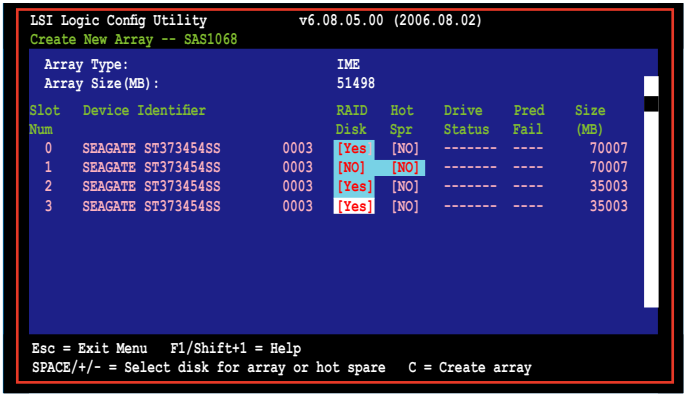
2. The **Select New Array Type** screen apprears.
   Use the arrow keys to select **Create IME Volume**, then press <Enter>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Select New Array Type -- SAS1068
Create IM Volume
Create Integrated Mirror Array of 2 disks plus an optional hot spare. Data on the primary disk may be migrated.
Create IME Volume
Create Integrated Mirrored Enhanced Array of 3 to 8 disks including an optional hot spare.
ALL Data on array disks will be deleted!
Create IS Volume
Create Integrated Striping array of 2 to 8 disks.
ALL Data on array disks will be deleted!
Esc = Exit Menu F1/Shift+1 = Help
Enter = Choose array type to create

3. The **Create New Array** screen shows the disks you can add to make up the IME volume.

   Integrated Mirroring Enhanced (IME) supports three to eight disks, or seven mirrored disks plus a hot spare disk. Use the arrow key to select a disk, then move the cursor to the RAID Disk column. To include this disk in the array, press <+>, <->, or <Space>.

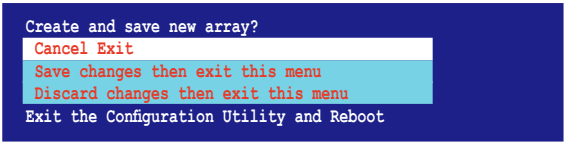
   You may also specify the Hot Spare disk here. Select the disk, then move the cursor to the Hot Spr column, then press <+>, <->, or <Space>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Create New Array -- SAS1068
Array Type: IME
Array Size(MB): 51498
Slot Num | Device Identifier | RAID Disk | Hot Spr | Drive Status | Pred Fail | Size (MB)
0 SEAGATE ST373454SS 0003 [Yes] [NO] ------- ---- 70007
1 SEAGATE ST373454SS 0003 [NO] [NO] ------- ---- 70007
2 SEAGATE ST373454SS 0003 [Yes] [NO] ------- ---- 35003
3 SEAGATE ST373454SS 0003 [Yes] [NO] ------- ---- 35003
Esc = Exit Menu F1/Shift+1 = Help
SPACE/+/- = Select disk for array or hot spare C = Create array

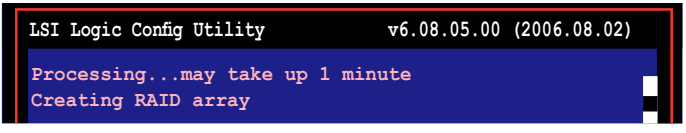
By default, the RAID Disk field shows No before array creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID array.
- The disk is not large enough to mirror existing data on the primary drive.
- The disk has been selected as the Hot Spare for the RAID array.
- The disk is already part of another array.

4. Repeat step 5 to add the other disks to the volume.
5. When done, press <C> to create the array, then select Save changes then exit this menu.


Create and save new array?
Cancel Exit
Save changes then exit this menu
Discard changes then exit this menu
Exit the Configuration Utility and Reboot

6. The utility creates the array.



5.2.3 Integrated Striping (IS) volume

Overview

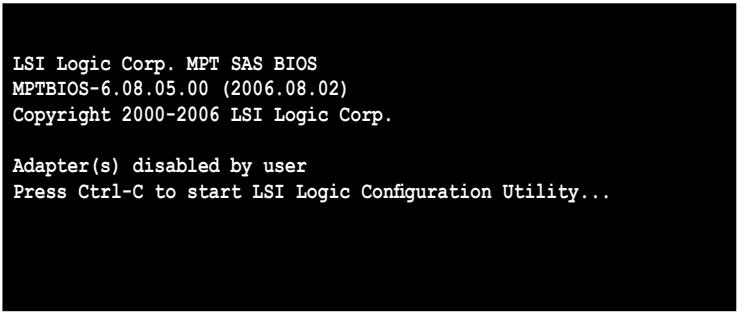
The Integrated Striping (IS) feature provides RAID 0 functionality, supporting volumes with two to eight disks. You may combine an IS volume with an IM or IME volume.

Creating Integrated Striping volumes

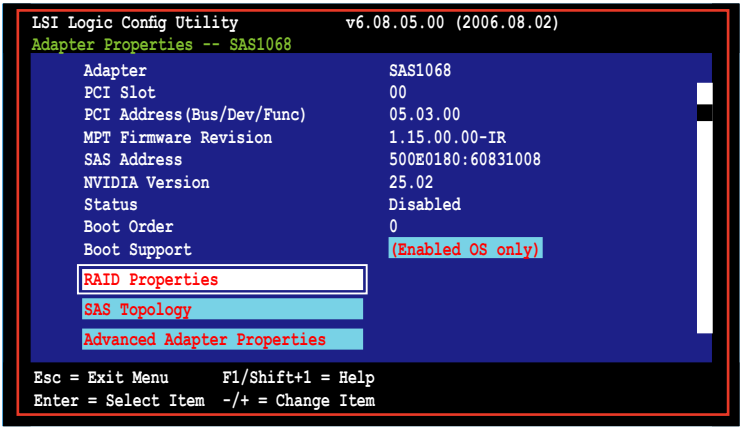
Do not combine Serial ATA and SAS disks in one volume.

To create an IS volume:

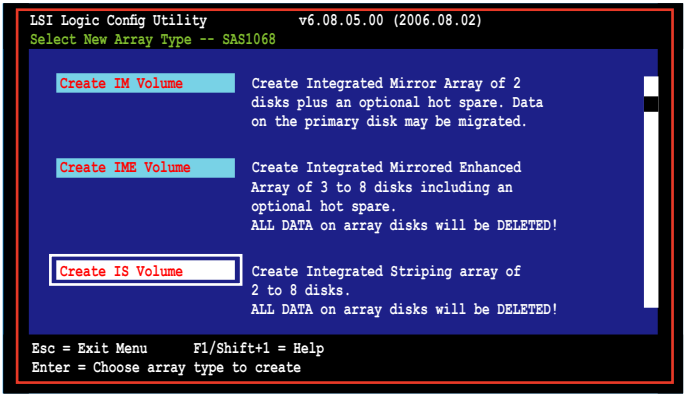
1. Turn on the system after installing all SAS hard disk drives.
2. During POST, press <Ctrl+C> to enter the SAS configuration utility.


LSI Logic Corp. MPT SAS BIOS
MPTBIOS-6.08.05.00 (2006.08.02)
Copyright 2000-2006 LSI Logic Corp.
Adapter(s) disabled by user
Press Ctrl-C to start LSI Logic Configuration Utility...

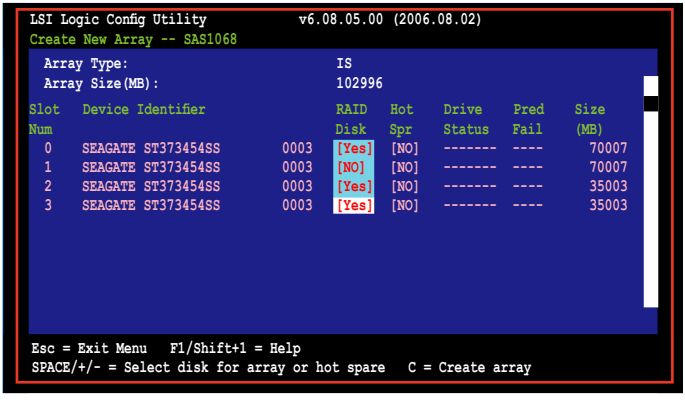
3. The **Adapter Properties** screen appears.
   Use the arrow keys to select **RAID Properties**, then press <Enter>.



4. The **Select New Array Type** screen apprears.
Use the arrow keys to select **Create IS Volume**, then press <Enter>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Select New Array Type -- SAS1068
Create IM Volume
Create Integrated Mirror Array of 2 disks plus an optional hot spare. Data on the primary disk may be migrated.
Create IME Volume
Create Integrated Mirrored Enhanced Array of 3 to 8 disks including an optional hot spare.
ALL DATA on array disks will be DELETED!
Create IS Volume
Create Integrated Striping array of 2 to 8 disks.
ALL DATA on array disks will be DELETED!
Esc = Exit Menu F1/Shift+1 = Help
Enter = Choose array type to create

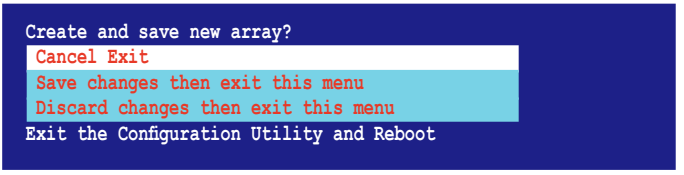
5. The **Create New Array** screen shows the disks you can add to make up the IS volume. Use the arrow key to select a disk, then move the cursor to the RAID Disk column. To include this disk in the array, press <+>, <->, or <Space>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Create New Array -- SAS1068
Array Type: IS
Array Size(MB): 102996
Slot Num | Device Identifier | RAID Disk | Hot Spr | Drive Status | Pred Fail | Size (MB)
0 SEAGATE ST373454SS 0003 [Yes] [NO] ------- ---- 70007
1 SEAGATE ST373454SS 0003 [NO] [NO] ------- ---- 70007
2 SEAGATE ST373454SS 0003 [Yes] [NO] ------- ---- 35003
3 SEAGATE ST373454SS 0003 [Yes] [NO] ------- ---- 35003
Esc = Exit Menu F1/Shift+1 = Help
SPACE/+/- = Select disk for array or hot spare C = Create array

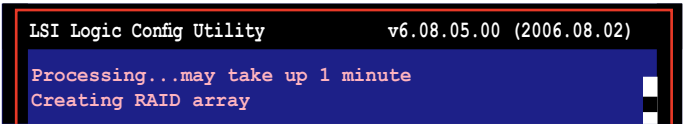
By default, the RAID Disk field shows No before array creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID array.
- The disk is not large enough to mirror existing data on the primary drive.
- The disk has been selected as the Hot Spare for the RAID array.
- The disk is already part of another array.

6. Repeat step 5 to add the other disks to the volume.
7. When done, press <C> to create the array, then select Save changes then exit this menu.


Create and save new array?
Cancel Exit
Save changes then exit this menu
Discard changes then exit this menu
Exit the Configuration Utility and Reboot

9. The utility creates the array.



5.2.4 Managing Arrays

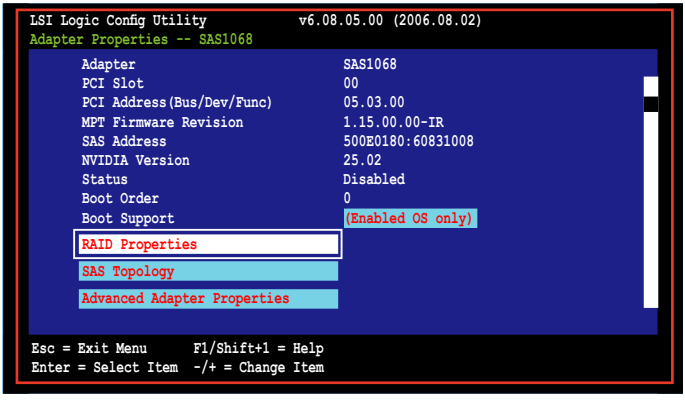
The LSI Logic MPT Setup Utility allows you to perform other tasks related to configuring and maintaining IM and IME volumes.

Refer to this section to view volume properties, manage the hot spare disk, synchronize the array, activate the array, and delete the array.

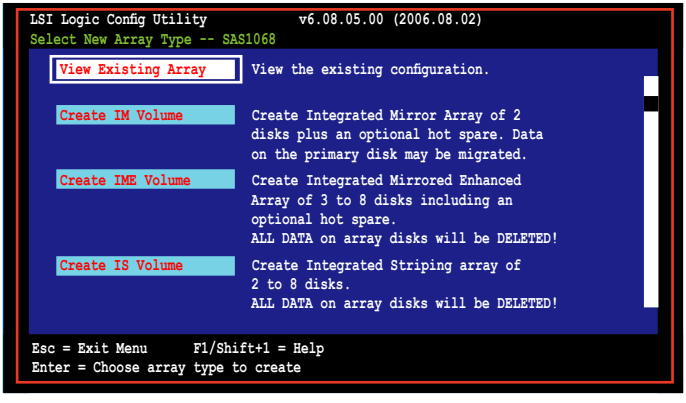
Viewing volume properties

To view volume properties:

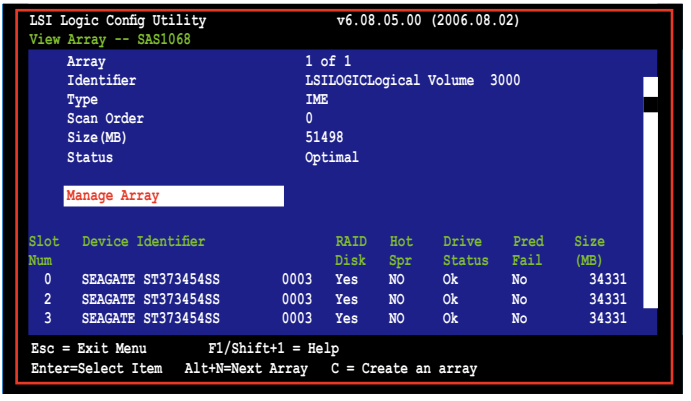
1. On the main menu, select **RAID Properties**.



2. On the next screen that appears, select **View Existing Array**.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Select New Array Type -- SAS1068
View Existing Array
View the existing configuration.
Create IM Volume
Create Integrated Mirror Array of 2 disks plus an optional hot spare. Data on the primary disk may be migrated.
Create IME Volume
Create Integrated Mirrored Enhanced Array of 3 to 8 disks including an optional hot spare.
ALL DATA on array disks will be DELETED!
Create IS Volume
Create Integrated Striping array of 2 to 8 disks.
ALL DATA on array disks will be DELETED!
Esc = Exit Menu F1/Shift+1 = Help
Enter = Choose array type to create

3. The **View Existing Array** screen appears. Here you can view properties of the RAID array(s) created. If you have configured a hot spare, it will also be listed. if you created more than one array, you may view the next array by pressing <Alt+N>.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
View Array -- SAS1068
Array 1 of 1
Identifier LSILOGICLogical Volume 3000
Type IME
Scan Order 0
Size(MB) 51498
Status Optimal
Manage Array
Slot Num
Device Identifier
RAID Disk
Hot Spr
Drive Status
Pred Fail
Size (MB)
0 SEAGATE ST373454SS 0003 Yes NO Ok No 34331
2 SEAGATE ST373454SS 0003 Yes NO Ok No 34331
3 SEAGATE ST373454SS 0003 Yes NO Ok No 34331
Esc = Exit Menu F1/Shift+1 = Help
Enter=Select Item Alt+N=Next Array C = Create an array

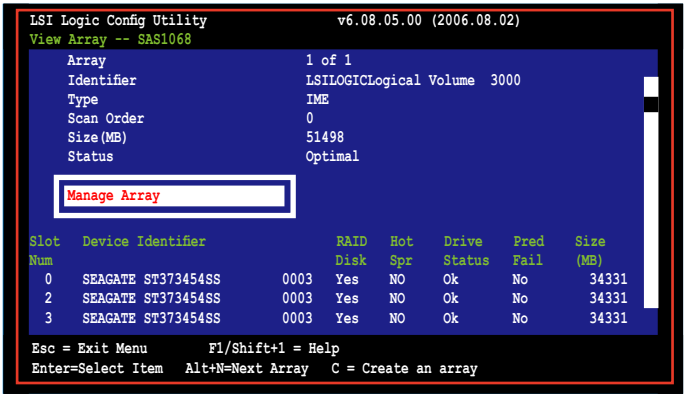
Managing hot spares

You may configure one disk as a global hot spare to protect critical data on the IM/IME volume(s). You may create the hot spare disk at the same time you create the IM/IME volume. Refer to this section when adding a hot spare disk on an existing volume.

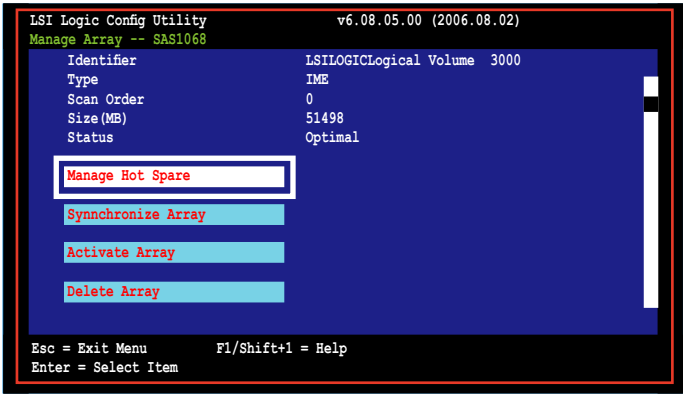
If a disk on an IM/IME volume fails, the utility automatically rebuilds the failed disk data on the hot spare. When the failed disk is replaced, the utility assigns the replacement as the new hot spare.

To create a hot spare:

1. Follow steps 1 ~ 3 of the section “Viewing volume properties.”
2. From the **View Array** screen, select **Manage Array**, then press <Enter>.

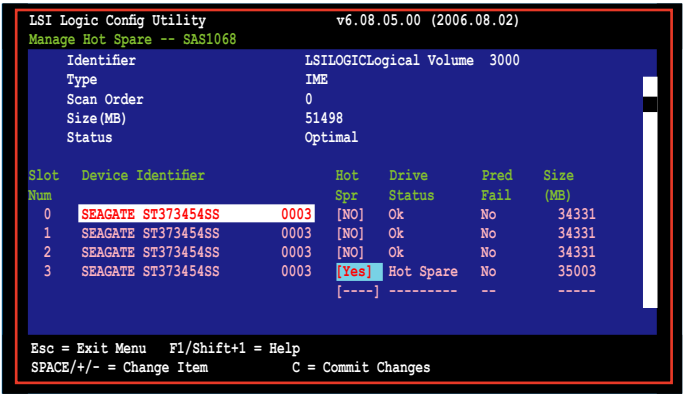

LSI Logic Config Utility v6.08.05.00 (2006.08.02)
View Array -- SAS1068
Array 1 of 1
Identifier LSILOGICLogical Volume 3000
Type IME
Scan Order 0
Size(MB) 51498
Status Optimal
Manage Array
Slot Num
Device Identifier
RAID Disk
Hot Spr
Drive Status
Pred Fail
Size (MB)
0 SEAGATE ST373454SS 0003 Yes NO Ok No 34331
2 SEAGATE ST373454SS 0003 Yes NO Ok No 34331
3 SEAGATE ST373454SS 0003 Yes NO Ok No 34331
Esc = Exit Menu F1/Shift+1 = Help
Enter=Select Item Alt+N=Next Array C = Create an array

3. From the **Manage Array** screen select **Manage Hot Spare**, then press <Enter>.



4. Use the arrow key to select the disk you would like to configure as hot spare, then move the cursor to the Hot Spr column. Press <+>, <->, or <Space>. The Drive Status column field now shows Hot Spare.

   Press <C> to commit the changes.

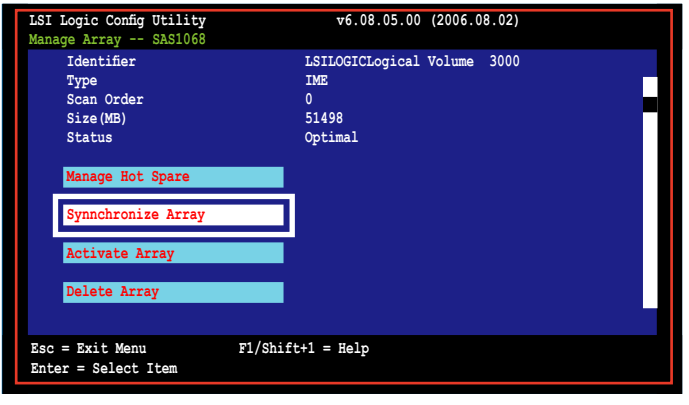

LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Manage Hot Spare -- SAS1068
Identifier LSILOGICLogical Volume 3000
Type IME
Scan Order 0
Size(MB) 51498
Status Optimal
Slot Num
Device Identifier
Hot Spr
Drive Status
Pred Fail
Size (MB)
0 SEAGATE ST373454SS 0003 [NO] Ok No 34331
1 SEAGATE ST373454SS 0003 [NO] Ok No 34331
2 SEAGATE ST373454SS 0003 [NO] Ok No 34331
3 SEAGATE ST373454SS 0003 [Yes] Hot Spare No 35003
[----] --------- -- -----
Esc = Exit Menu F1/Shift+1 = Help
SPACE/+/- = Change Item C = Commit Changes

Synchronizing the array

Synchronizing the array allows the utility to resynchronize data on the mirrored disk in the array. This procedure is seldom required because data synchronization is automatically done during normal operation.

To synchronize the array:

1. Follow steps 1 ~ 3 of the section “Viewing volume properties” and step 2 of the section “Managing hot spares.”
2. From the **Manage Array** screen select **Synchronize Array**, then press <Enter>.



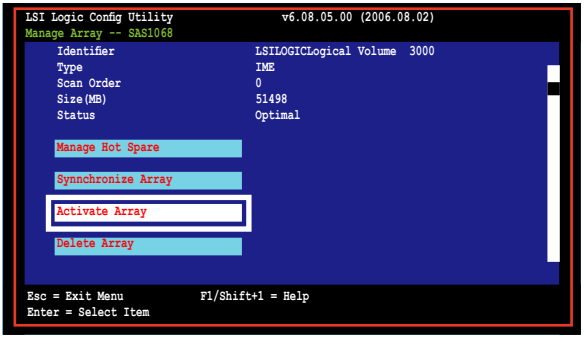
3. Press <Y> to begin the synchronization, or <N> to cancel.

Activating an array

If an array is removed from one controller/computer or moved to another, the array is considered inactive. When you add the array back to the system, you may reactivate the array.

To activate the array:

1. From the **Manage Array** screen, select **Activate Array**, then press <Enter>.



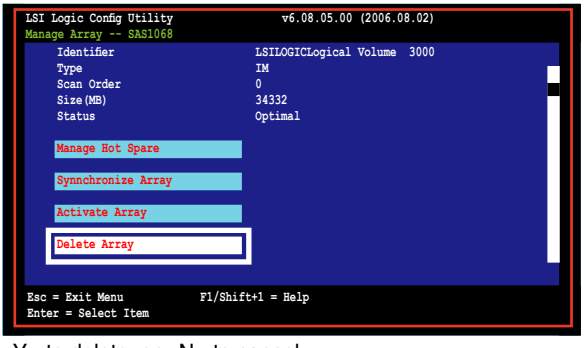
2. Press <Y> to activate, or <N> to cancel.

Deleting an array

- You cannot recover lost data if you delete an array. Make sure you back up important data before deleting an array.
- If you delete an IM (RAID 1) volume, the data is preserved on the primary disk.

To delete an array:

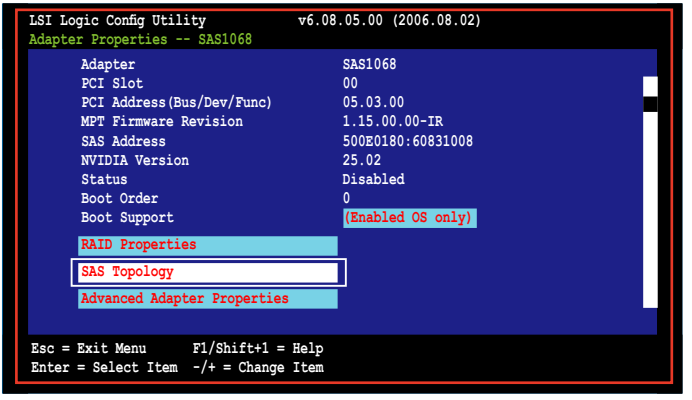
1. From the **Manage Array** screen, select **Delete Array**, then press <Enter>.



2. Press <Y> to delete, or <N> to cancel.

5.2.5 Viewing SAS topology

1. From the **Adapter Properties** screen, select **SAS Topology**.

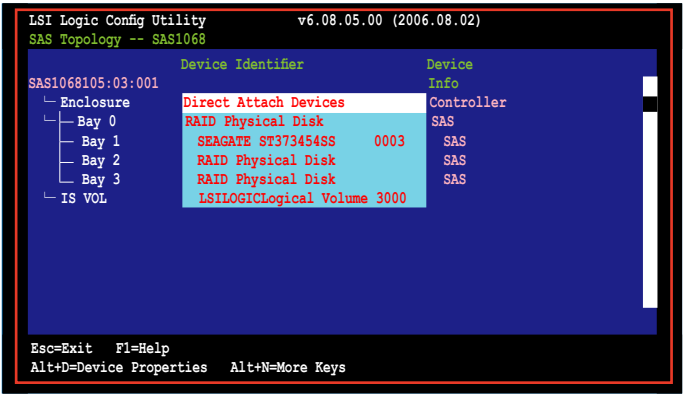


Press <Alt+D> to display device properties, or <Alt+M> to display more keys.

```
More keys for the SAS Topology display:

C = Clear Device Mappings for Non-Present Devices
R = Refresh SAS Topology
Enter = On a SAS Enclosure or Expander - Expand or Collapse Item
Enter = On a Disk Drive - Turn on the Locate LED (next key press turns off)
```

2. Information about the volume and its member-disks are then displayed.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
SAS Topology -- SAS1068
Device Identifier
Device Info
SAS1068105:03:001 Controller
Enclosure Direct Attach Devices
Bay 0 RAID Physical Disk SAS
Bay 1 SEAGATE ST373454SS 0003 SAS
Bay 2 RAID Physical Disk SAS
Bay 3 RAID Physical Disk SAS
IS VOL LSILOGICLogical Volume 3000
Esc=Exit F1=Help
Alt+D=Device Properties Alt+N=More Keys

Selecting a boot disk

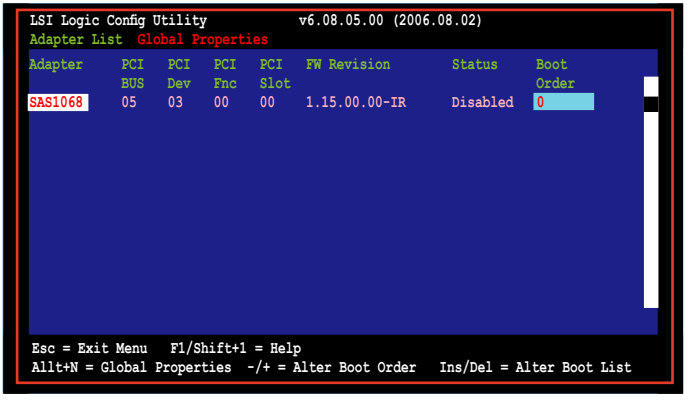
You can select a boot disk in the **SAS Topology** screen. This disk is then moved to scan ID 0 on the next boot, and remains at this position. This makes it easier to set BIOS boot device options and to keep the boot device constant during device additions and removals. There can be only one boot disk.

Follow these steps to select a boot disk:

1. In the **SAS BIOS CU**, select an adapter from the **Adapter List**.
2. Select the **SAS Topology** option.

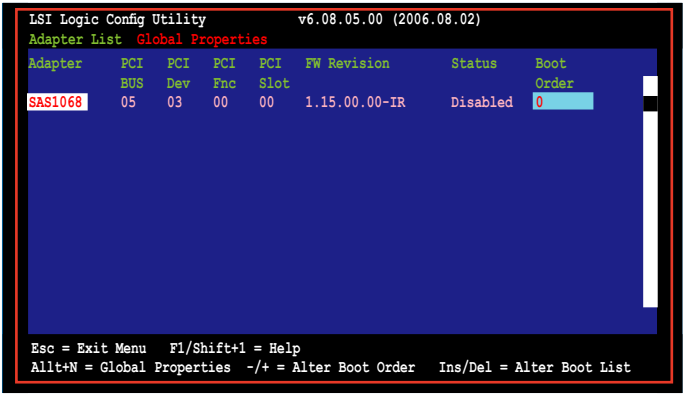
   The current topology is displayed. If the selection of a boot device is supported, the bottom of the screen lists the **Alt+B** option. This is the key for toggling the boot device. If a device is currently configured as the boot device, the **Device Info** column on the **SAS Topology** screen will show the word “Boot.”
3. To select a boot disk, move the cursor to the disk and press **Alt+B**.
4. To remove the boot designator, move the cursor to the disk and press **Alt+B**. This controller will no longer have a disk designated as boot.
5. To change the boot disk, move the cursor to the new boot disk and press **Alt+B**. The boot designator will move to this disk.

The firmware must be configured correctly in order for the **Alt+B** feature to work.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Adapter PCI BUS PCI Dev PCI Fnc PCI Slot FW Revision Status Boot Order
SAS1068 05 03 00 00 1.15.00.00-IR Disabled 0
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Global Properties -/+ = Alter Boot Order Ins/Del = Alter Boot List

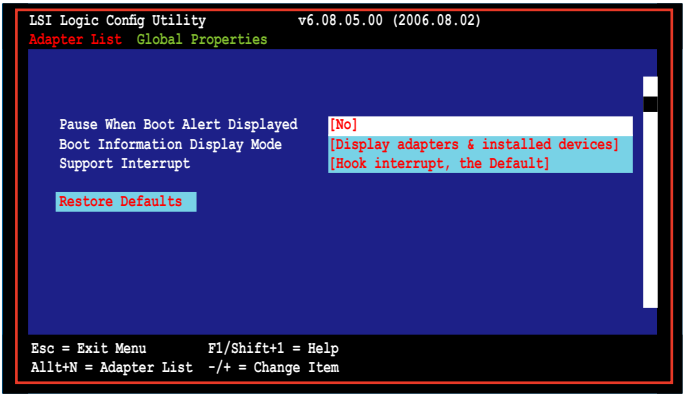
5.2.6 Global Properties

From the **Setup Utility** screen, press <Ctrl+C> to enter **LSI Logic Configuration**, then select **Global Properties**. The **Global Properties** menu allows you to change related settings.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Adapter PCI BUS PCI Dev PCI Fnc PCI Slot FW Revision Status Boot Order
SAS1068 05 03 00 00 1.15.00.00-IR Disabled 0
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Global Properties -/+ = Alter Boot Order Ins/Del = Alter Boot List

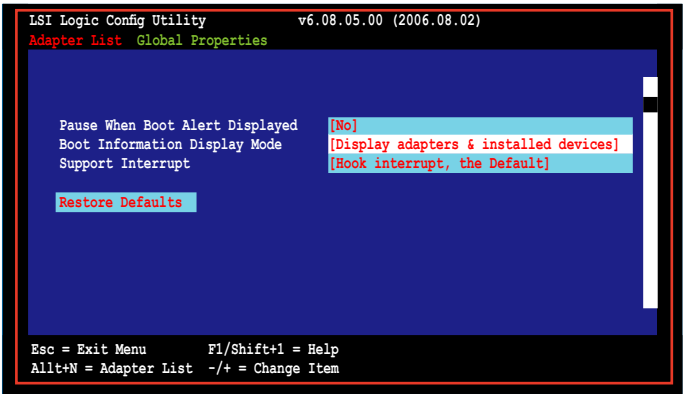
Pause When Boot Alert Displayed

Sets whether to pause or not when the boot alert displays.
Configuration options: [Yes] [No]


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Pause When Boot Alert Displayed [No]
Boot Information Display Mode [Display adapters & installed devices]
Support Interrupt [Hook interrupt, the Default]
Restore Defaults
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Adapter List -/+ = Change Item

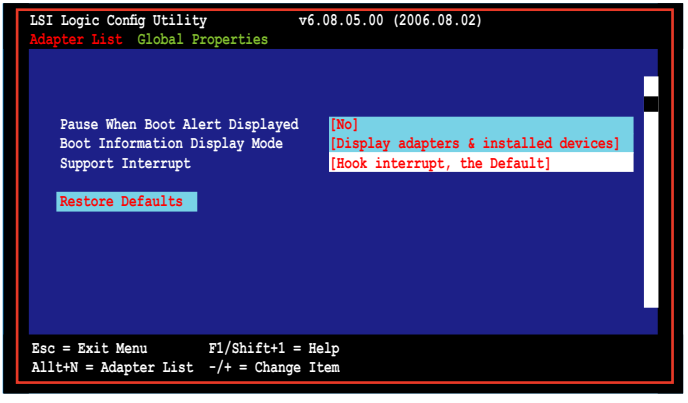
Boot Information Display Mode

Sets the disk information display mode.
Configuration options: [Display adapters & installed devices] [Display minimal information] [Display adapters and all devices] [Display adapters only]


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Pause When Boot Alert Displayed [No]
Boot Information Display Mode [Display adapters & installed devices]
Support Interrupt [Hook interrupt, the Default]
Restore Defaults
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Adapter List -/+ = Change Item

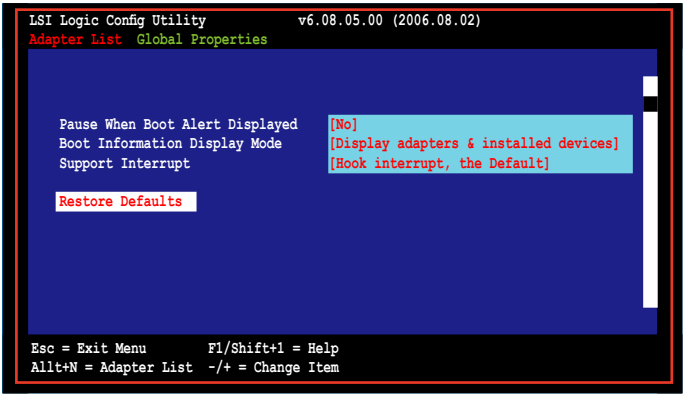
Support Interrupt

Configuration options: [Hook interrupt, the Default] [Bypass interrupt hook]


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Pause When Boot Alert Displayed [No]
Boot Information Display Mode [Display adapters & installed devices]
Support Interrupt [Hook interrupt, the Default]
Restore Defaults
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Adapter List -/+ = Change Item

Restore Defaults

This option allows you to discard the selections you made and restore the system defaults.


LSI Logic Config Utility v6.08.05.00 (2006.08.02)
Adapter List Global Properties
Pause When Boot Alert Displayed [No]
Boot Information Display Mode [Display adapters & installed devices]
Support Interrupt [Hook interrupt, the Default]
Restore Defaults
Esc = Exit Menu F1/Shift+1 = Help
Allt+N = Adapter List -/+ = Change Item

Chapter 6

This chapter instructs how to install the necessary drivers for different system components.

Driver installation

6.1 RAID driver installation

After creating the RAID sets for your server system, you are now ready to install an operating system to the independent hard disk drive or bootable array. This part provides instructions on how to install the RAID controller drivers during OS installation.

6.1.1 Creating a RAID driver disk

You may have to use another system to create the RAID driver disk from the system/motherboard support CD or from the Internet.

A floppy disk with the RAID driver is required when installing Windows® 2000/2003 or Red Hat® Enterprise /SuSE operating system on a hard disk drive that is included in a RAID set. You can create a RAID driver disk in DOS (using the Makedisk application in the support CD).

To create a RAID driver disk in DOS environment:

1. Place the motherboard support CD in the optical drive.
2. Restart the computer, then enter the BIOS Setup.
3. Select the optical drive as the first boot priority to boot from the support CD. Save your changes, then exit the BIOS Setup.
4. Restart the computer.
5. Press any key when prompted to boot from CD.

```
Loading FreeDOS FAT KERNEL GO!
Press any key to boot from CDROM...
```

The Makedisk menu appears.

```
A)  FreeDOS command prompt
B)  Create LSI 1068 SAS for Win2k/Win2k3 32 bit Driver Disk
C)  Create LSI 1068 SAS for Win2k3 64 bit Driver Disk
D)  Create LSI 1068 SAS for RHEL3 UP6 32 bit Driver Disk
E)  Create LSI 1068 SAS for RHEL3 UP6 64 bit Driver Disk
F)  Create LSI 1068 SAS for RHEL4 UP2 32 bit Driver Disk
G)  Create LSI 1068 SAS for RHEL4 UP2 64 bit Driver Disk
H)  Create the TS700-E4/RX8 emergent BIOS Recovery diskette
I)  Flash Phoenix BIOS for TS700-E4/RX8 system
J)  ESB2 ASF Firmware update
K)  Write TS700-E4/RX8 system FRU
Please choose A TO K:
```

6. Place a blank, high-density floppy disk to the floppy disk drive, then select the type of RAID driver disk you want to create by typing the number before the option
7. Press <Enter>.
8. Follow screen instructions to create the driver disk.

For systems with Red Hat® Enterprise versions that are not listed in the Makedisk menu, explore the support CD and copy the RAID driver disk from the following path:
For Intel® 6321 LSI MegaRAID: \Drivers\6321 LSI MegaRAID\Driver\Linux
For LSI 1068 SAS: \Drivers\LSI 1068\Driver\Linux
The paths above may differ based on variant models.

6.1.2 Installing the RAID controller driver

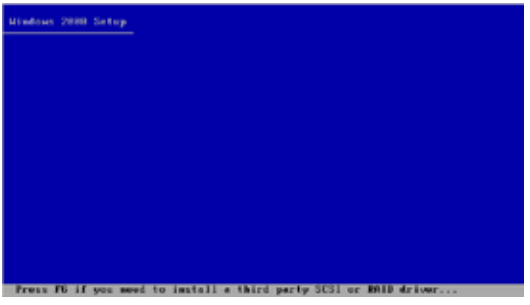
Windows® 2000/2003 Server OS

When installing the LSI 1068 driver to your OS, make sure the driver you are installing supports your current installed OS. We STRONGLY RECOMMEND that you use the LSI 1068 SAS utility bundled in the support CD to create a driver disk. Refer to page 6-1 for more information.

During Windows® 2000/2003 Server OS installation

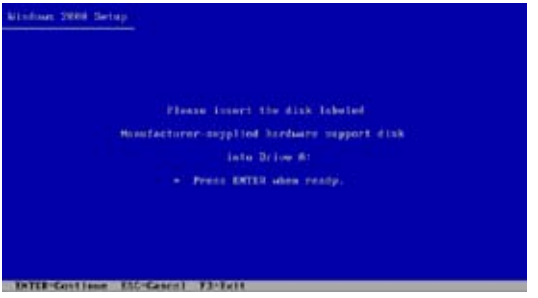
To install the RAID controller driver when installing Windows® 2000/2003 Server OS:

1. Boot the computer using the Windows® 2000/2003 Server installation CD. The Windows® 2000/2003 Setup starts.

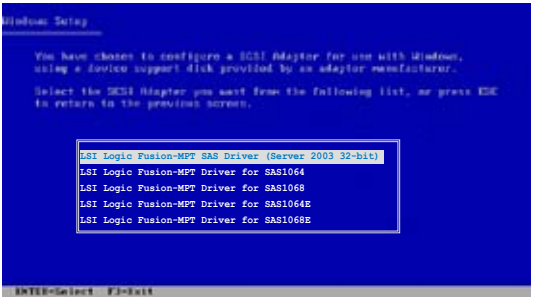


2. Press <F6> when the message “Press F6 if you need to install a third party SCSI or RAID driver...” appears at the bottom of the screen.
3. When prompted, press <S> to specify an additional device.

4. Insert the RAID driver disk you created earlier to the floppy disk drive, then press <Enter>.



5. Select the RAID controller driver from the list, then press <Enter>.


LSI Logic Fusion-MPT SAS Driver (Server 2003 32-bit)
LSI Logic Fusion-MPT Driver for SAS1064
LSI Logic Fusion-MPT Driver for SAS1068
LSI Logic Fusion-MPT Driver for SAS1064E
LSI Logic Fusion-MPT Driver for SAS1068E

- **Intel® 6321ESB Intel® MATRIX STORAGE** driver:

  - If SATA RAID mode is to enabled, select **Intel ESB2 SATA RAID Controller (Server ESB2)**.

  - If SATA AHCI mode is enabled, select **Intel ESB2 SATA AHCI Controller (Server ESB2)**.

- **LSI1068 PCI-X SAS controller** driver (DSBF-D12/ SAS model only):

  - For Windows 2000, select **LSI Logic Fusion-MPT Drivers for SAS1068** .

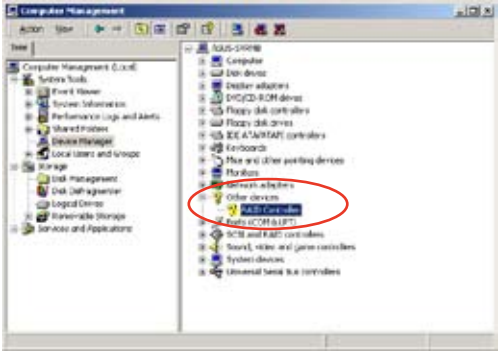
  - For 32-bit Windows Server 2003, select **LSI Logic Fusion-MPT SAS Driver (Server 2003 32-bit)**.

6. The Windows® 2000/2003 Setup loads the RAID controller drivers from the RAID driver disk. When prompted, press <Enter> to continue installation.
7. Setup then proceeds with the OS installation. Follow screen instructions to continue.

To an existing Windows® 2000/2003 Server OS

To install the RAID controller driver on an existing Windows® 2000/2003 Server OS:

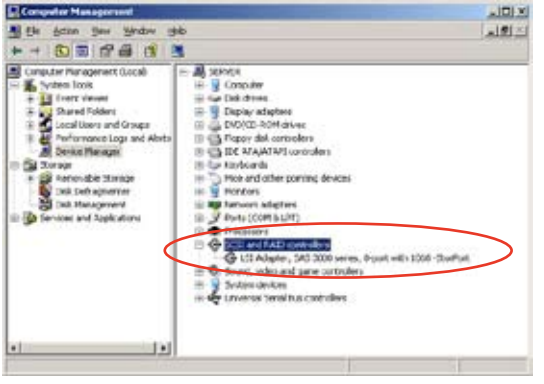
1. Restart the computer, then log in with **Administrator** privileges.
2. Windows® automatically detects the RAID controller and displays a **New Hardware Found** window. Click **Cancel**.
3. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
4. Click the **Hardware** tab, then click the **Device Manager** button to display the list of devices installed in the system.



5. Right-click the **RAID controller** item, then select **Properties**.
6. Click the **Driver** tab, then click the **Update Driver** button.
7. The **Upgrade Device Driver Wizard** window appears. Click **Next**.
8. Insert the RAID driver disk you created earlier to the floppy disk drive.
9. Select the option **Search for a suitable driver for my device (recommended)**, then click **Next**.
10. The wizard searches the RAID controller drivers. When found, click **Next** to install the drivers.
11. Click **Finish** after the driver installation is done.

To verify the RAID controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the "+" sign before the item **SCSI and RAID controllers**, then the LSI Adapter, SAS 3000 series, 8-port with 1068-StorPort item should appear.



The screen differs based on the controller.

4. Right-click the **RAID controller** driver item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.

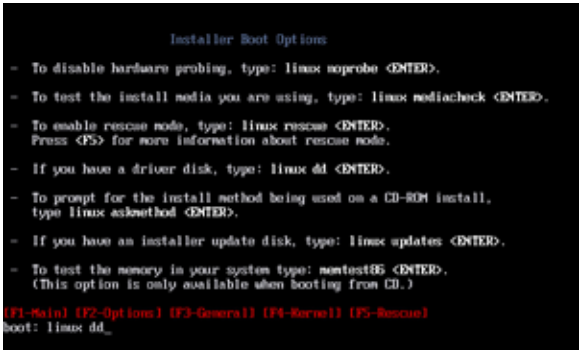
Red Hat® Enterprise

To install the Intel® 6321ESB LSI Logic Embedded SATA RAID controller driver when installing Red Hat® Enterprise OS:

1. Boot the system from the Red Hat® Installation CD.

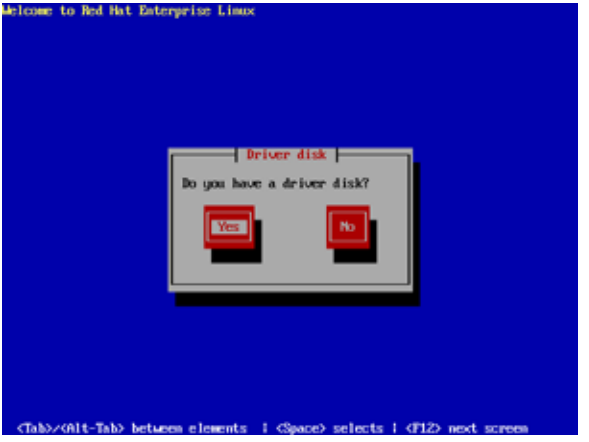
redhat.
Red Hat Enterprise Linux
- To install or upgrade in graphical mode, press the <ENTER> key.
- To install or upgrade in text mode, type: linux text <ENTER>.
- Use the function keys listed below for more information.
[F1-Main] [F2-Options] [F3-General] [F4-Kernel] [F5-Rescue]
boot:

2. At the **boot:**, type **linux dd** , then press <Enter>.

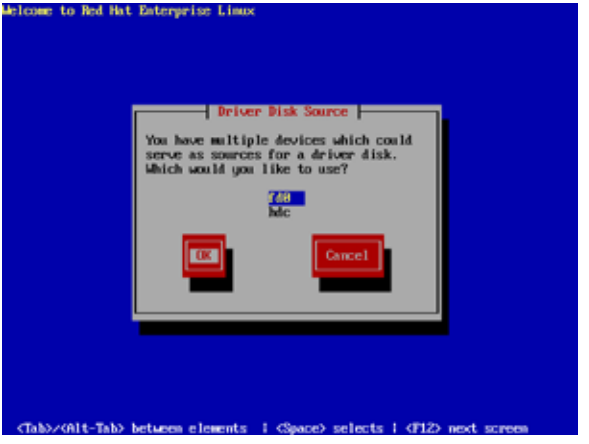

Installer Boot Options
- To disable hardware probing, type: linux noprobe <ENTER>.
- To test the install media you are using, type: linux mediacheck <ENTER>.
- To enable rescue mode, type: linux rescue <ENTER>.
Press <F5> for more information about rescue mode.
- If you have a driver disk, type: linux dd <ENTER>.
- To prompt for the install method being used on a CD-ROM install,
type linux askmethod <ENTER>.
- If you have an installer update disk, type: linux updates <ENTER>.
- To test the memory in your system type: memtest86 <ENTER>.
(This option is only available when booting from CD.)
[F1-Main] [F2-Options] [F3-General] [F4-Kernel] [F5-Rescue]
boot: linux dd

When installing a Red Hat 2.4 kernel with a Driver Update Disk (DUD) to a disk drive attached to a LSI HBA, use the command below at the install prompt: **linux dd updates.**

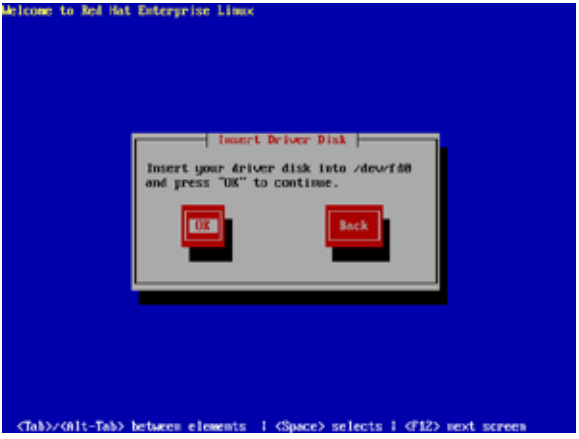
3. Select **Yes** using the <Tab> key when asked if you have the driver disk. Press <Enter>



4. Select **fd0** using the <Tab> key when asked to select the driver disk source. Press <Tab> to move the cursor to **OK**, then press <Enter>.


Welcome to Red Hat Enterprise Linux
Driver Disk Source
You have multiple devices which could serve as sources for a driver disk. Which would you like to use?
fd0
hdc
OK
Cancel
<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen

5. When prompted, insert the Red Hat® Enterprise RAID driver disk to the floppy disk drive, select **OK**, then press <Enter>.



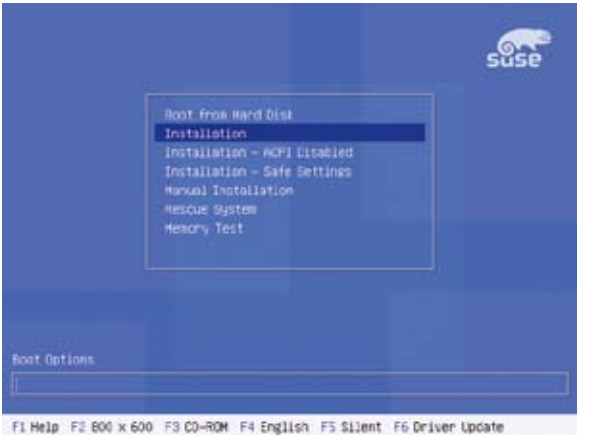
The drivers for the RAID controller are installed to the system.

6. Follow screen instructions to continue the OS installation.

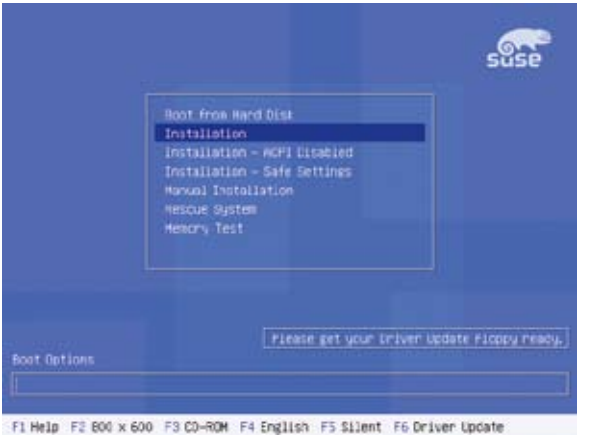
SuSE Linux

To install the RAID controller driver when installing SuSE Linux OS:

1. Boot the system from the SuSE Installation CD.
2. Select Installation from the **Boot Options** menu, then press <Enter>.


Boot from Hard Disk
Installation
Installation - ACPI Disabled
Installation - Safe Settings
Manual Installation
Rescue System
Memory Test
Boot Options
F1 Help F2 800 x 600 F3 CD-ROM F4 English F5 Silent F6 Driver Update

3. A message instructs you to prepare the RAID driver disk. Press <F6>.


Boot from Hard Disk
Installation
Installation - ACPI Disabled
Installation - Safe Settings
Manual Installation
Rescue System
Memory Test
Please get your Driver Update Floppy ready.
Boot Options
F1 Help F2 800 x 600 F3 CD-ROM F4 English F5 Silent F6 Driver Update

4. When prompted, insert the RAID driver disk to the floppy disk drive, then press <Enter>.

Boot from Hard Disk
Boot loader
Please insert the driver update floppy/CDROM.
OK
Memory Test
Please get your driver update floppy ready.
Boot Options
F1 Help F2 800 x 600 F3 CD-ROM F4 English F5 Silent F6 Driver Update

5. When prompted, select the floppy disk drive (fd0) as the driver update medium, select **OK**, then press <Enter>.

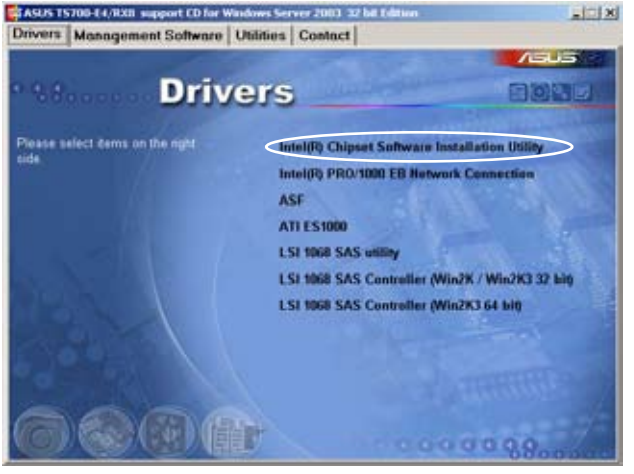
The drivers for the RAID controller are installed to the system.

6.2 Intel® chipset software installation

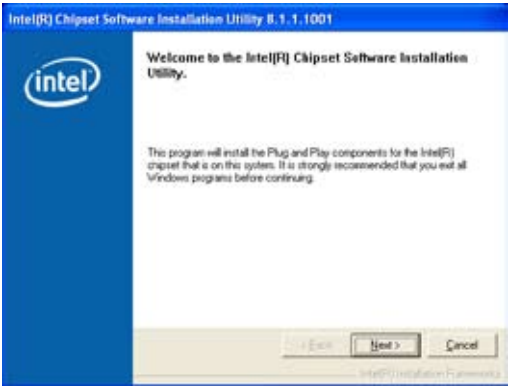
This section provides instructions on how to install the Plug and Play components for the Intel® chipset on the system.

You need to manually install the Intel® chipset software on a Windows 2000 / Server 2003 operating system. To install the Intel® chipset software:

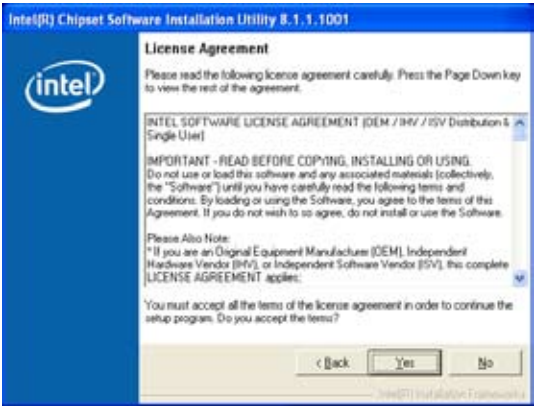
1. Restart the computer, then log on with **Administrator** privileges.
2. Insert the motherboard/system support CD to the optical drive. The support CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.
3. Click the item **Intel(R) Chipset Software Installation Utility** from the menu.



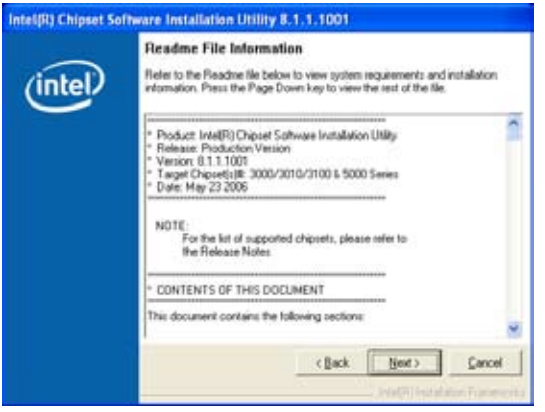
4. The **Intel(R) Chipset Software Installation Utility** window appears. Follow the screen instructions to complete installation.


Intel(R) Chipset Software Installation Utility 8.1.1.1001
intel
Welcome to the Intel(R) Chipset Software Installation Utility.
This program will install the Plug and Play components for the Intel(R) chipset that is on this system. It is strongly recommended that you exit all Windows programs before continuing.
< Back
Next >
Cancel

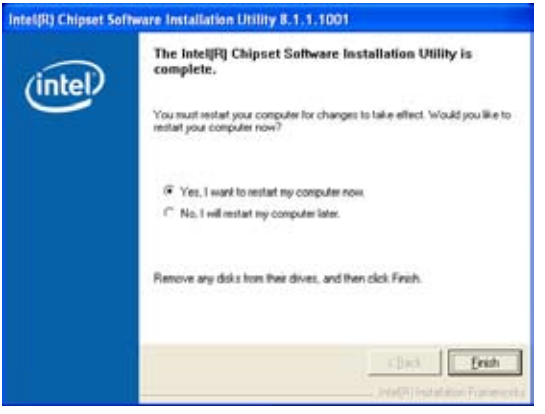
5. Select **Yes** to accept the terms of the **License Agreement** and continue the process.


Intel(R) Chipset Software Installation Utility 8.1.1.1001
intel
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No

6. Read the **Readme File Information** and press **Next** to activate the installation.


Intel(R) Chipset Software Installation Utility 8.1.1.1001
Readme File Information
Refer to the Readme file below to view system requirements and installation information. Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Software Installation Utility
* Release: Production Version
* Version: 8.1.1.1001
* Target Chipset(s)®: 3000/3010/3100 & 5000 Series
* Date: May 23 2006
NOTE:
For the list of supported chipsets, please refer to the Release Notes.
* CONTENTS OF THIS DOCUMENT
This document contains the following sections:
< Back
Next >
Cancel

7. After completing the installation, click **Finish** to restart the computer.


Intel(R) Chipset Software Installation Utility 8.1.1.1001
The Intel(R) Chipset Software Installation Utility is complete.
You must restart your computer for changes to take effect. Would you like to restart your computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish.
< Back
Finish

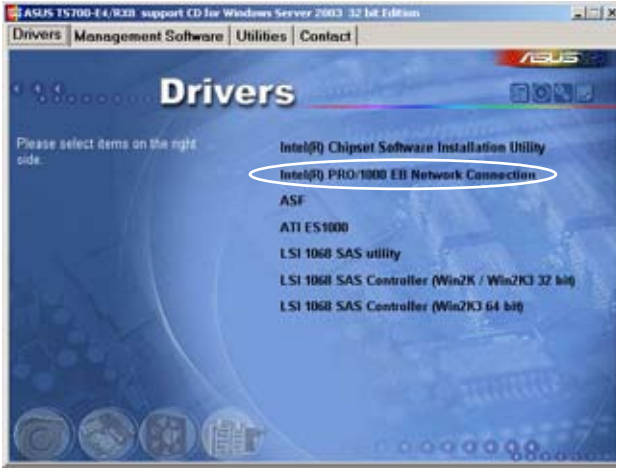
6.3 LAN driver installation

This section provides the instructions on how to install Intel® Gigabit LAN controller drivers.

6.3.1 Windows 2000/Server 2003

To install the Intel® Gigabit LAN controller driver on a Windows® 2000/ Server 2003 OS:

1. Restart the computer, and then log on with **Administrator** privileges.
2. Insert the motherboard/system support CD to the optical drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.
   - Windows® automatically detects the LAN controllers and displays window. Click **Cancel** to close this window.
   - If **Autorun** is NOT enabled in your computer, browse the contents of the support CD to locate the file **AUTORUN.EXE** from the **\Drivers\Intel 82563EB** folder. Double-click the **AUTORUN.EXE** and follow step 4 to run the installation.
3. Click the **Intel® PRO/1000 EB Network Connection** option.



4. Click the **Install Drivers** option to begin installation.

5. Click **Next** button when the **Intel® PRO Network Connections – InstallShield Wizard** window appears.

Intel(R) PRO Network Connections - InstallShield Wizard
Welcome to the InstallShield Wizard for Intel(R) PRO Network Connections
Installs drivers, Intel(R) PROSet for Windows* Device Manager, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

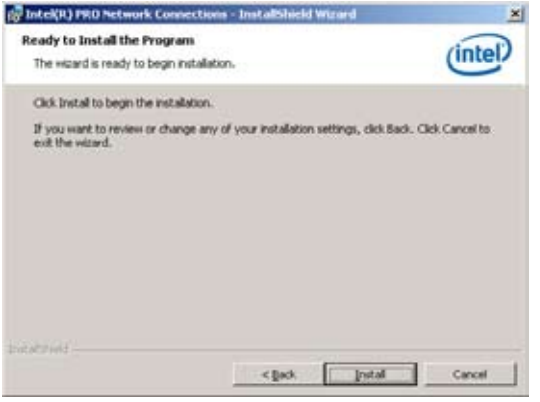
6. Select the **"I accept the terms in the license agreement"** and then click the **Next** button.

Intel(R) PRO Network Connections - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT (Final, License)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
LICENSES: Please Note:
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

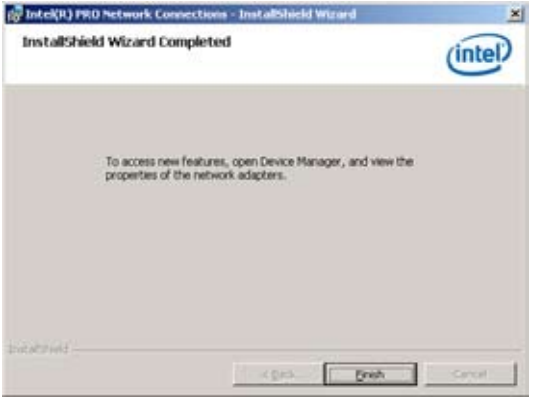
7. Press the **Complete** and click **Next** button to fully install the driver, Intel® PROSet for Windows Device Manager and Advanced Networking Services.

Intel(R) PRO Network Connections - InstallShield Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Complete
Installs drivers, Intel(R) PROSet for Windows* Device Manager, and Advanced Networking Services.
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

8. Follow the screen instructions to complete installation.

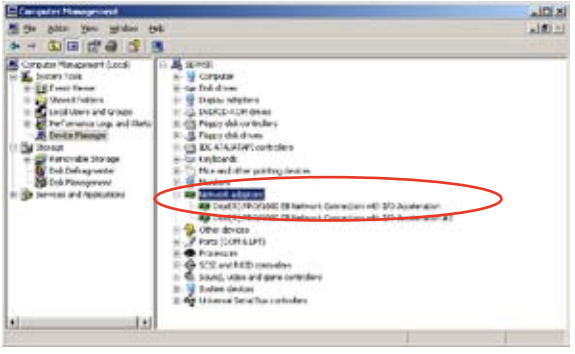

Intel(R) PRO Network Connections - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

9. When finished, press **Finish** to continue.


Intel(R) PRO Network Connections - InstallShield Wizard
InstallShield Wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
InstallShield
< Back
Finish
Cancel

To verify the LAN controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the "+" sign before the item **Network adapters**, then **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** item should appear.



6.3.2 Red Hat/SuSE Linux

Follow these instructions when installing the Intel® LAN controller base driver for the in Red Hat® and SuSE Linux operating system.

Before installing the LAN driver:

Before installing the LAN driver, you must install the kernel development application. To install the kernel development:

1. Insert the Linux OS installation CD Disk 1 to the optical drive.
2. Double click "**Application" > "System setting" > "Add / Remove application**".
3. Select "**Kernel Development**" from the **Development Tools**.
4. Follow the later steps and add different CDs according to the instructions displayed.

Building the driver from the TAR file:

1. Insert the motherboard/system support CD to the optical drive and mount the optional drive in the Linux platform.
2. Copy the base driver tar file from the motherboard/system support CD to the directory of your local hard disk. The name format of driver file is "**e1000-<Version>.tar.gz**".

   For example: the file name of driver version 7.0.38 is "**e1000-7.0.38.tar.gz**".

   - The Intel® LAN driver for Linux OS is located in:

     \Drivers\INTEL 82563EB\PRO1000\LINUX
3. Untar or unzip the archive.
   tar zxf e1000-x.x.x.tar.gz
4. Change to the driver src directory.

   cd e1000-x.x.x/src/
5. Use the command "makeinstall" to compile the driver module.

   makeinstall
6. After reboot the system, please refer to Linux distribution documentation to configure the network protocol and IP address.

6.4 VGA driver installation

This section provides instructions on how to install the ATI® ES1000 Video Graphics Adapter (VGA) driver.

6.4.1 Windows® 2000/Server 2003

You need to manually install the ATI® ES1000 VGA driver on a Windows® 2000 / Server 2003 operating system. To install the ATI® ES1000 VGA driver:

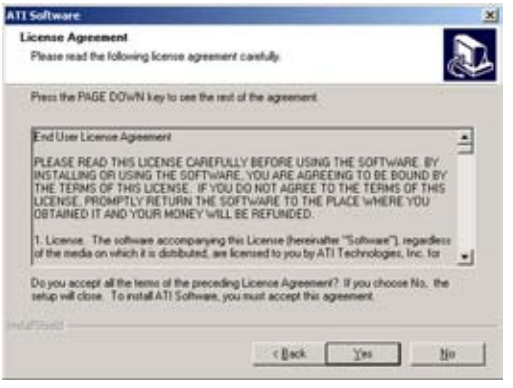
1. Restart the computer, then log on with Administrator privileges.
2. Insert the motherboard/system support CD to the optical drive. The support CD automatically displays the Drivers menu if Autorun is enabled in your computer.

The **Drivers** menu if Autorun is enabled in your computer.

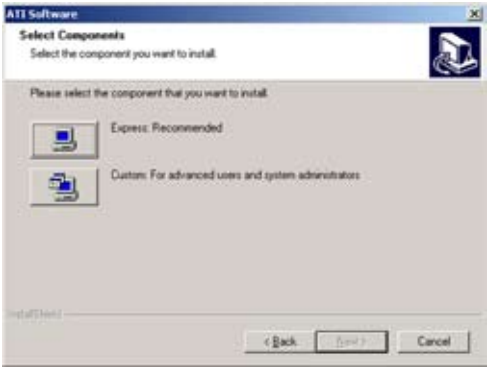
3. Click the item **ATI ES1000** from the menu.

4. The **ATI Software** window appears. Follow the screen instructions to complete installation.

5. Select **Yes** to accept the terms of the **License Agreement** and continue the process.


ATI Software
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
End User License Agreement
PLEASE READ THIS LICENSE CAREFULLY BEFORE USING THE SOFTWARE. BY INSTALLING OR USING THE SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, PROMPTLY RETURN THE SOFTWARE TO THE PLACE WHERE YOU OBTAINED IT AND YOUR MONEY WILL BE REFUNDED.
1. License. The software accompanying this License (hereinafter "Software"), regardless of the media on which it is distributed, are licensed to you by ATI Technologies, Inc. for
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install ATI Software, you must accept this agreement.
< Back
Yes
No

6. Press the button to select **Express** installation to activate quick installation.



7. After completing the installation, restart the computer.

Setup Complete
Setup has finished copying files to your computer.
Before you can use the program, you must restart Windows or your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Finish

6.5 Management applications and utilities installation

The support CD that came with the motherboard package contains the drivers, management applications, and utilities that you can install to avail all motherboard features.

The contents of the support CD are subject to change at any time without notice. Visit the ASUS website (www.asus.com) for updates.

6.5.1 Running the support CD

Place the support CD to the optical drive. The CD automatically displays the Drivers menu if Autorun is enabled in your computer.

If Autorun is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the CD.

6.5.2 Drivers menu

The Drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

The screen display and driver options vary under different operating system versions.

6.5.3 Management Software menu

The Management Software menu displays the available network and server monitoring applications. Click an item to install.

6.5.4 Utilities menu

The Utilities menu displays the software applications and utilities that the motherboard supports. Click an item to install.

6.5.5 Contact information

Click the Contact tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.